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**The Economic Structure of
California Seaports**

by

Dennis M. King, Ph.D.

and

James Liedke-Konow

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THE ECONOMIC STRUCTURE
OF CALIFORNIA SEAPORTS

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PREFACE

In the U.S. seaports are a hybrid of private and public enterprise. Seaport authorities manage publicly-owned properties, but they usually do not operate with tax dollars and compete in an environment which requires them to invest and expand commercial facilities in order to keep and attract business. California's six major seaports are very competitive and they are among the most successful in the U.S. They are financially sound, seem to have adequate financial reserves for new investments and are viewed by many as models of efficient public enterprise. At the same time, however, there is growing concern over the future development of California seaports and the potential impact of unfettered inter-port competition. The basic question is whether more centralized planning would result in more efficient development of California seaports and more economic benefits to citizens of the state.

Specialization and economies of scale in shipping and cargo handling, along with changing technologies and growing U.S. trade with Pacific-rim countries, are expected to put enormous pressures on California seaports for the rest of the 20th century. Many believe that competition among California seaports in this new shipping environment could result in overcapitalization at small, less competitive ports and unavoidable congestion and excessive demands on the public facilities and infrastructure around larger more competitive ports. Ironically, at the same time that concern is growing over the potential social and

economic costs from inter-port competition, there is also growing interest in ways to spend the financial revenues that have accrued to California seaports as a result of inter-port competition in the past. The role of regional and local port planning and the appropriateness of using port revenues for port expansion and/or other public projects are important social issues that are being given a great deal of attention by public policy-makers in California and leaders of industries that rely on California seaports.

This report provides a brief overview of seaport management issues facing California and describes the financial structure and potential economic impacts of changes affecting California's six major commercial seaports. The report is intended to be a background document for evaluating seaport development options and it is organized into four chapters. Chapter 1 contains a brief overview of national and statewide seaport policy issues. Chapter 2 provides an overview of California's maritime industries and waterborne trade and Chapter 3 contains statistical profiles of the six major California seaports. Chapter 4 describes how California seaports are linked with the rest of the California economy and contains economic multipliers that show the direct, indirect and induced economic impacts of California seaports and related industries. Technical data are provided in tables and graphs and suggestions for additional reading are provided at the end of each chapter.

CHAPTER I
INTRODUCTION

General Background

Over 13% of U.S. foreign trade passes through California seaports. If California were a nation, it would rank twelfth in terms of international trade and eighth in terms of GNP. A great deal of California's agricultural and industrial production¹ relies on the movement of cargo through its six major seaports. (See Exhibit 1-1.) California's seaports also constitute a major link in the international trade system of the U.S. and are the source of industrial, recreational, and aesthetic wealth to the residents of California and other western states.

California's seaports are of obvious economic significance because of the services they provide to promote commerce and industry and because of the incomes and jobs generated by the loading and offloading of ships, cargo documentation, shipping lines, storage services, marine insurance, freight-forwarding, etc. However, they are also important because like the legal system, the national highway system, or the New York Stock Exchange, California seaports constitute a basic part of the infrastructure of the U.S. market system. Besides their direct and indirect impact on the California economy, California

1

Security Pacific Bank maintains extensive data-bases related to the California economy and foreign trade. For a concise statistical summary, see the CALIFORNIA'S INTERNATIONAL TRADE series published annually by Security Pacific.

seaports are important because they facilitate trade, promote private enterprise and help the U.S. market system to work efficiently.²

U.S. foreign trade with Pacific-rim countries has increased dramatically over the past decade and this trend is expected to continue into the 1980's.³ This will mean increased cargo traffic and development opportunities for west coast seaports. Adequate planning and investments in west coast seaports are required if the U.S. is to take advantage of trade opportunities in the Pacific and compete successfully in world markets with other industrial powers.

With increasing trade opportunities, however, come new development problems. Changing technologies in shipping and cargo handling, the trend toward larger and more specialized ports and vessels, and the growth in intermodal transportation systems are dramatically changing the way cargo moves in and out

2

The U.S. market system relies on a set of laws that protects private property rights and institutions and facilities that allow the transfer of private property rights between individuals. Seaports facilitate the movement of cargo, but they also provide an important link between potential buyers and sellers and are essential gateways for international trade. By expanding access to domestic and international markets, they broaden competition and provide a necessary ingredient in the U.S. market system.

3

Pacific-rim countries are those countries located on the western rim of the Pacific Basin including Japan, South Korea, Taiwan, Indonesia, Singapore and other Newly Industrialized Countries (NICs).

of the U.S. Rapid population growth and industrial change in California, along with these changes in shipping and cargo handling, and the growth of the Pacific rim trade, combine to produce especially complex port development issues in California. The way these issues are handled at the state level and at the port level will have long-term consequences in terms of the California economy and the quality of life around California's major seaports.

Over time, the investment and pricing decisions of California's port commissioners and restrictions put on them by state and federal governments will determine how cargo moves through California's seaports. These decisions, in turn, will affect the location decisions of California industry and the ability of California industry to compete in domestic and foreign markets. As industries respond to changing seaport conditions, these decisions eventually influence the demographic characteristics and economic welfare of the California population.

The potential impacts from industry responses to local and regional seaport management decisions are difficult to forecast and will be difficult to attribute to particular seaport investment or pricing policies, but they are inevitable. The location and capacities of California seaports and the distribution of cargo through them has and will continue to have long-term effects on the cost of living and conducting business in various parts of California and households and businesses will respond.

The National Setting

The development and maintenance of harbors and navigable waterways in the U.S. is a federal responsibility, but there are no federally managed harbors or port facilities in the U.S. Docks, terminals and other "superstructures" that comprise a seaport are usually managed by state or local governments or by private corporations. During 1980, the Maritime Administration of the U.S. Department of Commerce (MARAD) conducted a survey of U.S. seaports which among other things determined the type of port ownership and the condition of port facilities in various regions of the country. That survey showed that on a national basis 12% of seaport facilities are managed by state governments, 37% by local governments, and 51% by private interest. In the South Pacific Region which includes California and Hawaii, there is more control by local governments and private interests and almost no control by the state government. (See Exhibit 1-2.) The study also showed that the physical condition of U.S. seaports in the South Pacific Area is slightly below average with 18% of port facilities in "fair" condition and 16% in "poor" condition. (See Exhibit 1-3.) The MARAD study, however, was oriented primarily toward maritime cargo handling facilities and did not evaluate the condition of facilities used for other port functions.

The extreme decentralization of seaport management in the U.S. is unique in the industrialized world and has had a significant impact on regional patterns of seaport development. Competition for shipping traffic among U.S. seaports is unlike

competition in other U.S. industries because it involves investments rather than pricing policies. The prices charged by seaports usually constitute less than 5% of overall shipping costs and in selecting a port, shippers are much more interested in the availability of cargo handling and storage facilities and transportation links than the level of port fees. To attract waterborne trade a seaport must have modern, efficient facilities and equipment; and the level of fees charged for wharfage, dockage and other port-provided services are of secondary importance.⁴

The economics of modern ocean shipping favor large specialized vessels, but to operate profitably these vessels must keep the amount of time spent in port to a minimum.⁵ Ports noted

⁴ In the traditional view, price competition results in efficient and appropriately scaled industrial production. Since seaport charges account for less than 5% of overall shipping costs, ports cannot compete for shipping on the basis of price so the self-regulating aspects of price competition do not operate. When seaports compete aggressively on the basis of available facilities rather than the cost or price competition, "overcapitalization" is the expected outcome. Because of revenues from rents or other commercial ventures, some ports can remain financially sound despite inefficiencies and economic waste caused by nonprice competition for shipping business.

⁵ Vessel construction costs and manpower costs do not increase proportionately with vessel size or cargo capacity. To reduce costs shippers continuously increase the size of vessels, but since trucks and trains have not increased in size, it is important for seaports to have shore facilities to accommodate transient cargo as well as adequate channel/berthing depths to accommodate larger vessels. With the fixed costs increasing as a percentage of total shipping costs, the volume of cargo moved (ton-miles) has more impact on vessel profits. To maintain adequate profits shipping companies need fast turn-around times which require modern offloading equipment, adequate onshore transient storage, etc.

for rapid turn-around-time are, therefore, very attractive to modern shippers, and as a result, the competitive pressure on U.S. seaports has been to develop large, special purpose cargo handling facilities. This competition has resulted in some over-capitalization as seaports that win competitive battles increase their cargo handling capacities to take advantage of economies of scale while those that lose find themselves with idle capacity that cannot be transferred to high traffic areas. Some over capacity may be useful at active ports to handle peak load requirements, but when the competitive battles are over, facilities at many smaller U.S. ports will remain underutilized even during peak load periods. This potential for economic waste is a problem that becomes more important as cargo handling equipment and facilities become more expensive and the competitive advantages of large special purpose ports become more apparent.

Over the past twenty years, a few large modern U.S. seaports on each coast have gained a competitive edge over smaller seaports. Many smaller seaports were originally developed to handle many types of cargoes and to serve urban population centers and they have not been able to respond fast enough to compete for containerized cargo, intermodal shipping, supertankers, superliners, etc. Most are losing business to the new "super-ports" like New York and Los Angeles. These "super-ports" have extensive cargo handling facilities and intermodal transportation links with U.S. markets and are integral in what are being called "micro-bridge," "minibridge" and "landbridge"

6
networks. Unable to compete for foreign trade, many smaller U.S. seaports are evolving into regional receiving centers rather than foreign trade ports. Many are handling cargo that enters or leaves the U.S. through one of the "super-ports" and is transported to and from the smaller port by barge, rail or truck. This change in ocean shipping seems to be dictated purely by economies of scale in shipping and cargo handling and is not necessarily bad. It does, however, deserve careful consideration by seaport planners and public policy makers who must evaluate the role seaports should play in the California economy and determine how California seaports will develop in response to centralized planning or the investment and pricing decisions by competing port managers.

Seaport Planning

The availability of various types of cargo handling equipment, facilities and services determines the type and volume of shipping that can take place at a given seaport. Tankers, container ships, bulk carriers and passenger ships all require specialized facilities, and as the size of ocean carriers and the nature of cargo containers change, the requirements for shore facilities change. In general, the types of cargo handling services that must be provided at each seaport to support shipping traffic are as follows:

6
The micro-bridge, mini-bridge and land-bridge concepts are all ways of substituting a water/land route for an all water route. They involve single bills of lading through the sea/land network from the port of origin to the final destination. Each concept is described and compared with alternate all water routes in Appendix B.

Primarily Private Services

Tug and Towing
Stevedoring
Marine Warehouse Operators
Pilots
Vessel Operators
Freight-Forwarders
Customhouse Brokers
Shipping Agents
Export/Import Services

Misc. Shipping Services

Ship Repair
Ship Chandlers

Primarily Public Services

Dockage
Wharfage
Bunkering
Demurrage
Warehousing

Intermodal Shipping Services

Rail-Access
Motor-Freight
Barge-Services

The movement of cargo through a seaport can be broken down
7
into the following stages:

- 1) Vessel passage through channel to and from quay;
- 2) Cargo transfer between ship's hold and quay;
- 3) Cargo movement between quay and transit storage area;
- 4) Transit storage;
- 5) Movement between transit storage and loading platform;
- 6) Loading or unloading of inland transport vehicles;
- 7) Movement of land vehicle to and from port area.

Efficient port operations require approximately the same cargo handling capacity for each type of cargo at each stage of the process. To avoid costly bottlenecks there must be coordinated development of berthing space, channel and berthing depths, and offloading facilities as well as onshore container and bulk

7

Two recent texts that deal with the logistics and economics of moving cargo through a seaport are International Ocean Shipping by B. Abrahamsson, Westview Press, 1980 and Port Economics by J.O. Jansson and D. Schneerson, MIT Press, 1982.

storage areas, links with intermodal transportation networks, etc. Since there can be a significant lag of up to 3-5 years between the time a needed investment is identified and the time a structure or facility can be constructed, the planning process at an individual seaport is extremely important. Since many of the cargo-handling services required at each stage are not usually under the direct control of the port authority, there may⁸ be a need to coordinate private as well as public investing.

The responsibility for port planning and development in the U.S. is with the individual port authority, but there are regional and national associations of port authorities which provide some central direction for U.S. port development in the absence of any national port policy. These associations have also provided a countervailing force to shipping conferences⁹ which control around 40% of U.S. inbound and outbound cargo. In California the California Association of Port Authorities (CAPA) provides the forum for managers of individual ports to set tariffs and discuss regional investment and pricing issues. Through CAPA many of the social costs associated with excessive interport competition have been avoided.

8

Bulk cargo terminals, passenger terminals, offloading equipment and other essential "superstructures" of a commercial seaport are frequently acquired by private industry under lease arrangements or joint venture arrangements with the port district. Since over 50% of seaport facilities in the U.S. are privately owned, the amount of private/public coordination required to insure efficient cargo handling can be substantial.

9

Shipping conferences are groups of shipping companies that agree to abide by established tariff schedules and coordinate routing and scheduling. They were originally designed to support rates during slack times, but now control many cargo handling and shipping costs during peak and slack times. They face some competition from "trampers" and nonconference liners, but their control over shipping rates has been growing. Shippers' councils provide one countervailing force to shipping conferences and the collective action of port authorities provides another. For a thorough discussion of shipping conferences, see International Ocean Shipping by B.J. Abrahamsson, West View Press, 1980.

EXHIBIT 1-1

MAJOR CALIFORNIA SEAPORTS

PORT LEGEND

- | | |
|----------------|------------------|
| 1. San Diego | 4. Oakland |
| 2. Long Beach | 5. Richmond |
| 3. Los Angeles | 6. San Francisco |



California

General Cargo

including—

- fish and shellfish
- fruit juices
- bananas
- coffee
- pulp
- lumber
- iron and steel
- metal products
- vehicles

Dry Bulk

- chemicals
- fertilizers
- salt
- sugar
- phosphate rock
- gypsum rock
- sand
- concrete
- logs
- wood chips
- metal scrap

Liquid Bulk

- molasses
- vegetable oils

Grains

Crude Petroleum

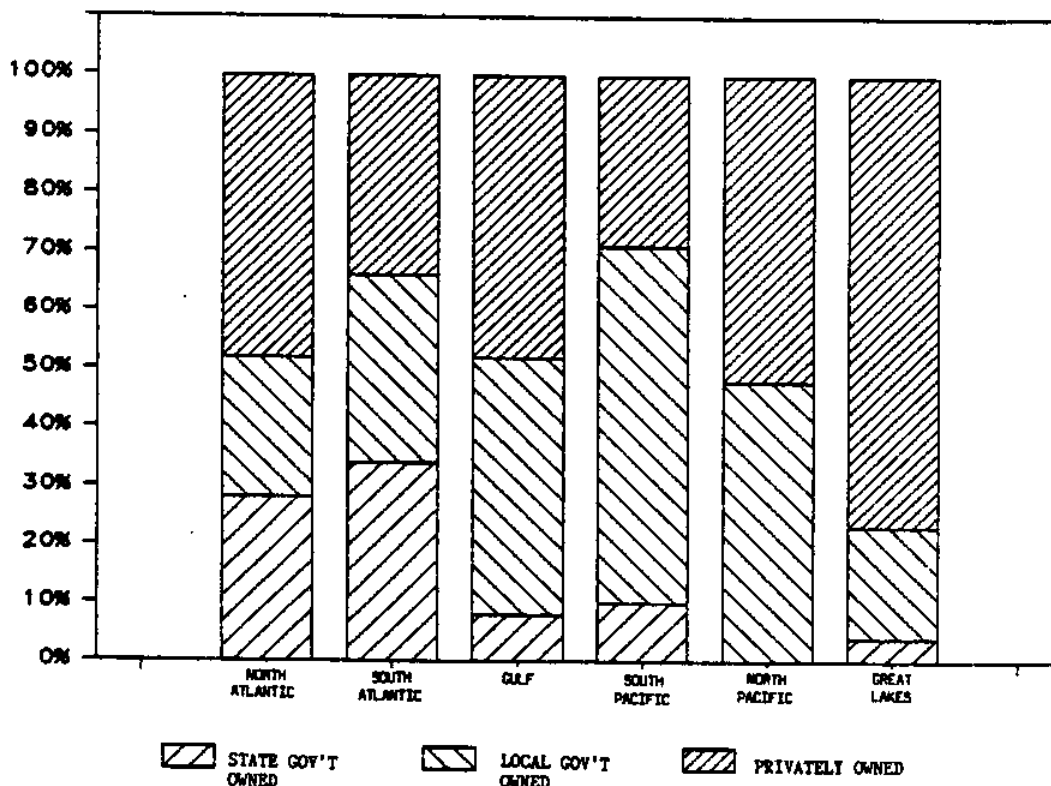
Petroleum Products

LEGEND

- | | | | |
|--|-------------|--|--------------------|
| | Breakbulk | | Coal |
| | Container | | Ore |
| | Dry Bulk | | Crude Petroleum |
| | Liquid Bulk | | Petroleum Products |
| | Grains | | Liquefied Gases |

EXHIBIT 1-2

DISTRIBUTION OF PORT FACILITIES OWNERSHIP BY REGION

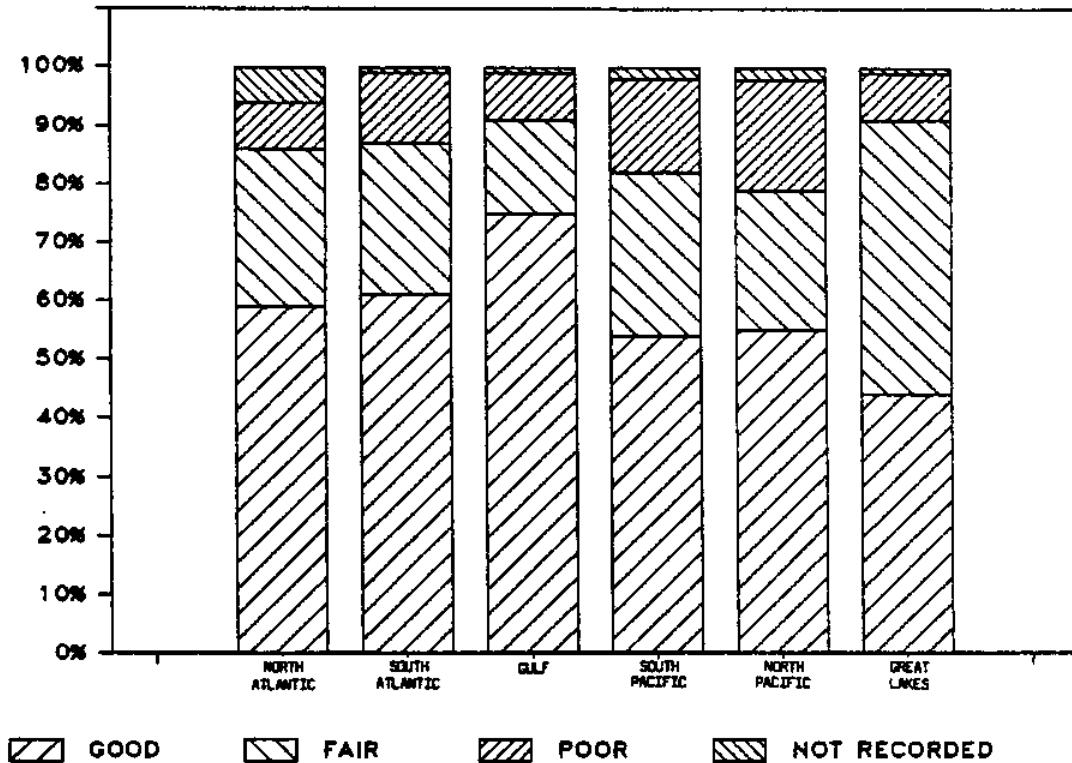


<u>REGION</u>	<u>STATE</u>	<u>LOCAL</u>	<u>PRIVATE</u>
North Atlantic	28%	24%	48%
South Atlantic	34%	32%	34%
Gulf	8%	44%	48%
South Pacific	10%	61%	29%
North Pacific	0%	48%	52%
Great Lakes	4%	19%	77%
National Average	12%	37%	51%

North Atlantic: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, VA
 South Atlantic: NC, SC, GA, FL, Puerto Rico, Virgin Islands
 Gulf: FL, AL, MS, LA, TX
 South Pacific: CA, HI
 North Pacific: OR, WA, AK
 Great Lakes: MN, WI, MI, IL, IN, OH, PA, NY

EXHIBIT 1-3

PHYSICAL CONDITION OF PORT FACILITIES BY REGION

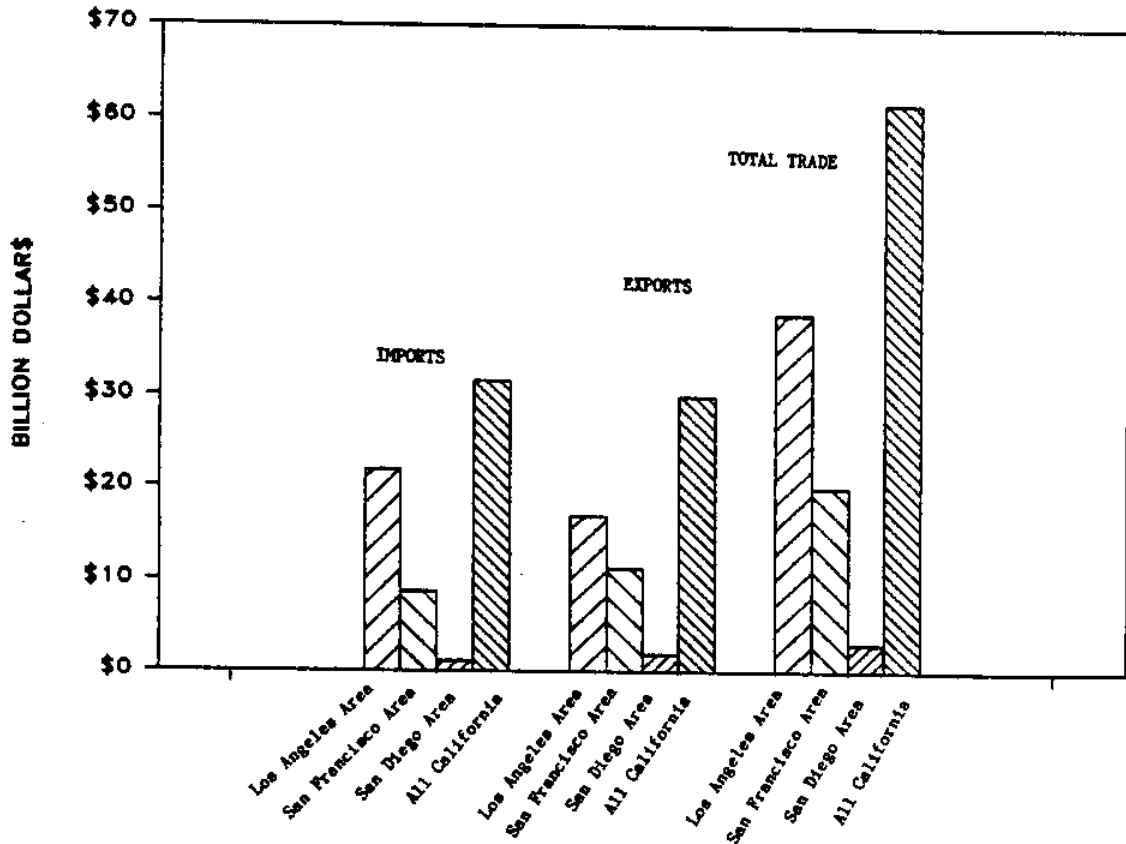


<u>REGION</u>	<u>GOOD</u>	<u>FAIR</u>	<u>POOR</u>	<u>NOT RECORDED</u>
North Atlantic	59%	27%	8%	6%
South Atlantic	61%	26%	12%	1%
Gulf	75%	16%	8%	1%
South Pacific	54%	28%	16%	2%
North Pacific	55%	24%	19%	2%
Great Lakes	44%	47%	8%	1%
National Average	58%	29%	11%	2%

North Atlantic: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, VA
 South Atlantic: NC, SC, GA, FL, Puerto Rico, Virgin Islands
 Gulf: FL, AL, MS, LA, TX
 South Pacific: CA, HI
 North Pacific: OR, WA, AK
 Great Lakes: MN, WI, MI, IL, IN, OH, PA, NY

EXHIBIT 1-4

DISTRIBUTION OF CALIFORNIA'S INTERNATIONAL TRADE BY CUSTOMS DISTRICTS
(billion of dollars)



<u>AREA</u>	<u>IMPORTS</u>	<u>EXPORTS</u>	<u>TOTAL TRADE</u>
LOS ANGELES	\$21.9	\$16.9	\$38.8
SAN FRANCISCO	\$8.7	\$11.2	\$19.9
SAN DIEGO	\$1.1	\$1.9	\$3.0
TOTAL CALIFORNIA TRADE	\$31.7	\$30.0	\$61.7

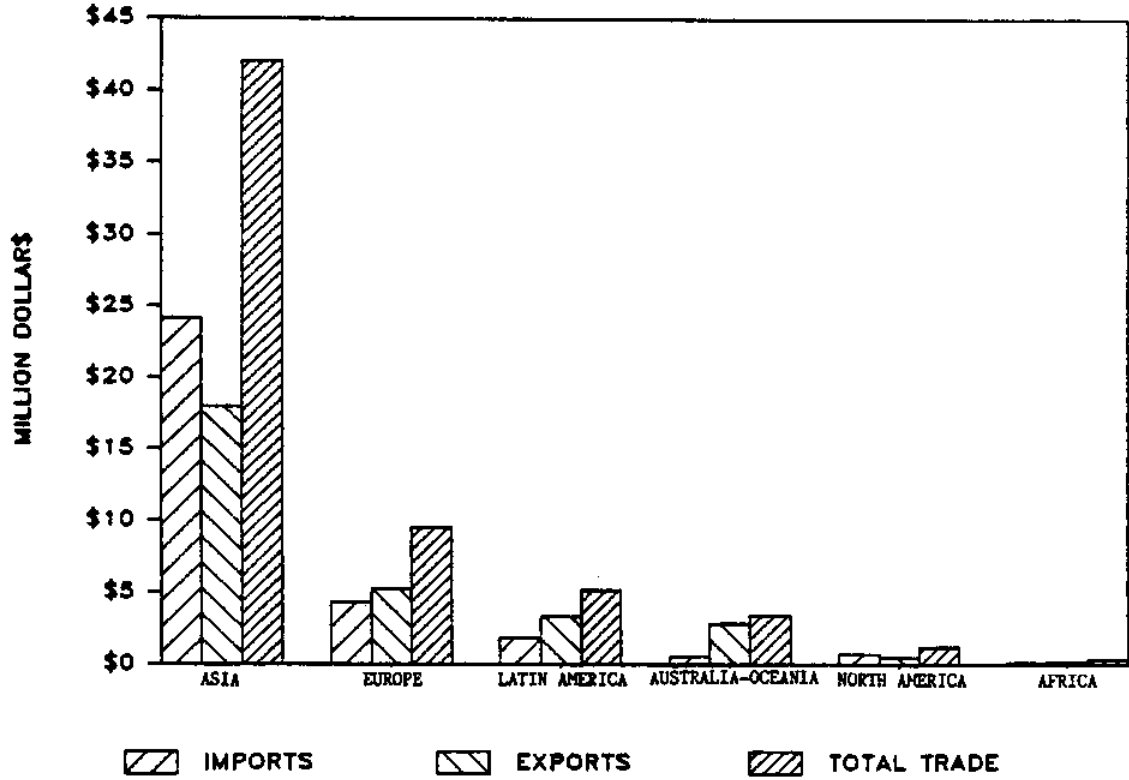
Los Angeles Area includes the Port of Los Angeles and the Port of Long Beach.

San Francisco Area includes the Port of San Francisco, the Port of Oakland and the Port of Richmond.

San Diego Area includes the Port of San Diego.

EXHIBIT 1-5

CALIFORNIA INTERNATIONAL TRADE BY WORLD REGION
calendar year 1981



<u>REGION</u>	<u>% OF CALIFORNIA TRADE</u>	<u>IMPORTS</u>	<u>EXPORTS</u>	<u>TOTAL TRADE</u>
		-----millions of dollars-----		
ASIA	68%	24,130	17,954	42,084
EUROPE	15%	4,286	5,204	9,490
LATIN AMERICA	8%	1,831	3,293	5,124
AUSTRALIA/OCEANIA	6%	577	2,818	3,395
NORTH AMERICA	2%	712	514	1,226
AFRICA	1%	154	207	361

CHAPTER II
CALIFORNIA SEAPORTS

An Overview

Waterborne trade passing through California seaports during 1971-1981 grew at an average annual rate of 6%. Although the decline in foreign trade during the 1981-1982 economic recession reduced the amount of cargo handled through many world ports, the outlook is for accelerated growth in waterborne trade through California seaports. Liquid bulk cargo, including oil deliveries, accounted for around 50% of the "revenue-tons" through California seaports during 1981 and containerized cargo accounted for another 20%. This is a dramatic change from 1971 when liquid bulk accounted for less than ___% and containerized cargo for less than ___%.

The cargo flows through California during 1981 by cargo/vessel type and by custom district are presented in Exhibit 2-1. Note that 65% of the revenue tons passing through California during 1981 were handled in the Los Angeles/Long Beach area and another 26% in the San Francisco Bay area. Other ports, including San Diego and inland ports like Sacramento, accounted for less than 10%. The percentage of cargo handled by California's smaller ports is expected to decline further as larger specialized ports attract cargo from smaller ports which do not have the cargo volume to justify or finance the investments required to serve modern shippers.

The major sources of revenues for a seaport are ship services such as dockage, wharfage and demurrage, rentals, including concession fees from commercial/industrial port tenants, and interest on port financial reserves required to fund long term capital projects. Exhibit 2-2 shows the approximate distribution of port revenues for each of California's six major seaports. Note the significant difference in revenue sources between major shipping ports like Los Angeles which derived 56% of 1981 revenues from shipping services and 21% from rents, and "landlord" ports like San Diego which derived over 45% from rents and less than 16% from ship services. Differences reflect the comparative advantages of various California ports and are likely to become more distinct in the coming years as economies of scale in shipping favor larger shipping ports while smaller ports turn to new industrial/commercial partnerships and joint ventures.

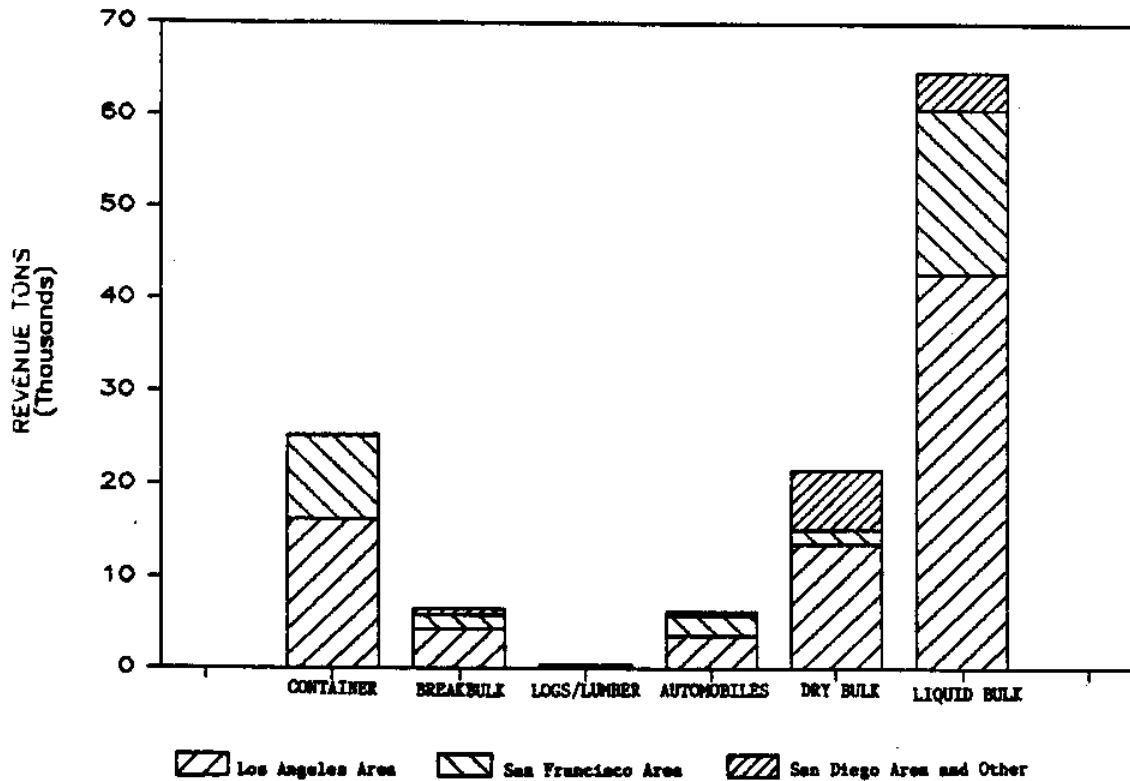
The distribution of cargo flows through each of California's six major seaports is shown in Exhibit 2-3 and the number of vessel arrival/departures at each seaport is shown in Exhibit 2-4. Revenue-tons per vessel arrival/departure at each seaport indicate the relative size of cargo loads being handled at each seaport and these are shown in Exhibit 2-5. Note that the 1981 revenue-ton per vessel arrival for Los Angeles is five times higher than for San Diego.

In response to forecasts of increasing U.S. trade with Pacific-rim countries during the 1980's and 1990's, ports at San Francisco, Long Beach and Los Angeles have major capital expansion programs underway. New types of "intermodal" shipping

systems are being developed at these ports and are being referred to as MICRO-BRIDGE, MINI-BRIDGE and LAND-BRIDGE systems. These systems involve sea/land shipping networks, sometimes operated by single carriers, where cargo is passed through the seaport to its ultimate destination under a single bill of lading. This networking of land and sea shipping is expected to dramatically change the structure of U.S. shipping industries and the facility and service requirements at shipping ports. The economies of scale emerging as a result of these land-sea networks are also likely to give a clear advantage to larger ports over smaller ports in handling most types of cargo. An outline of each of the "bridge" links developing through west coast ports is contained in Appendix B.

EXHIBIT 2-1

MARITIME CARGO FLOWS THROUGH CALIFORNIA
calendar year 1981



Cargo/Vessel Type	REVENUE-TONS			
	LA/LB (000)	SF Bay (000)	SD & Other (000)	Calif. (000)
Container	16,186	9,001	64	25,251
Breakbulk	4,295	1,550	628	6,473
Logs/Lumber	271	13	143	427
Automobiles	3,582	2,247	397	6,226
Dry Bulk	13,554	1,568	6,426	21,548
Liquid Bulk	42,911	17,890	3,994	64,795
Total	80,799	32,269	11,652	124,720

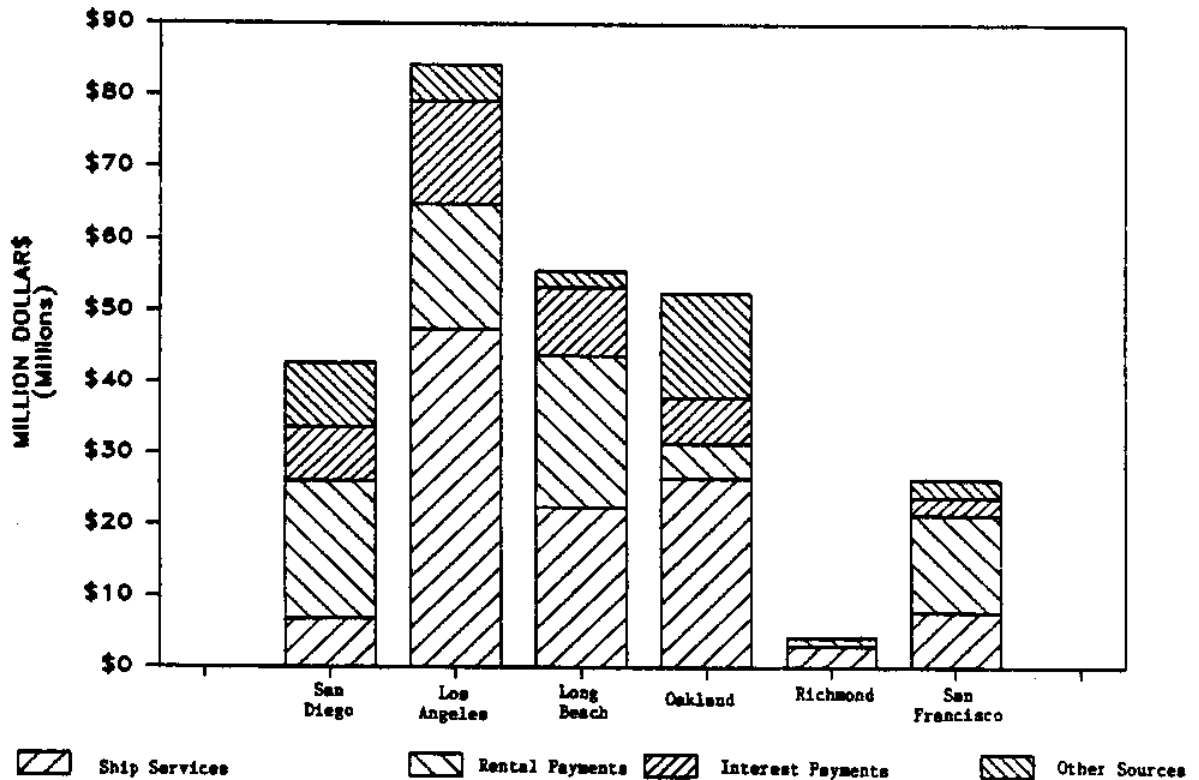
Los Angeles Area includes the Port of Los Angeles and the Port of Long Beach.

San Francisco Area includes the Port of San Francisco, the Port of Oakland and the Port of Richmond.

San Diego Area includes the Port of San Diego.

EXHIBIT 2-2

REVENUE SOURCES FOR MAJOR CALIFORNIA PORTS
(Fiscal Year 1981-82)



	San Diego	Los Angeles	Long Beach	Oakland	Richmond ¹	San Francisco
Shipping Services	\$ 6,778,544	\$47,414,968	\$22,353,859	\$26,473,296	\$ 2,973,790	\$ 7,804,379
Rentals	19,227,186	17,382,989	21,475,366	4,853,864	1,176,044	13,576,978 ²
Interest Income	7,673,927	14,468,525	9,464,106	6,529,642	60,929	2,488,557
Other	8,980,786	4,995,250	2,254,131	14,658,940	70,809	2,482,876
Total	\$42,588,443	\$84,261,732	\$55,547,462	\$52,515,742	\$ 4,281,372	\$26,352,790

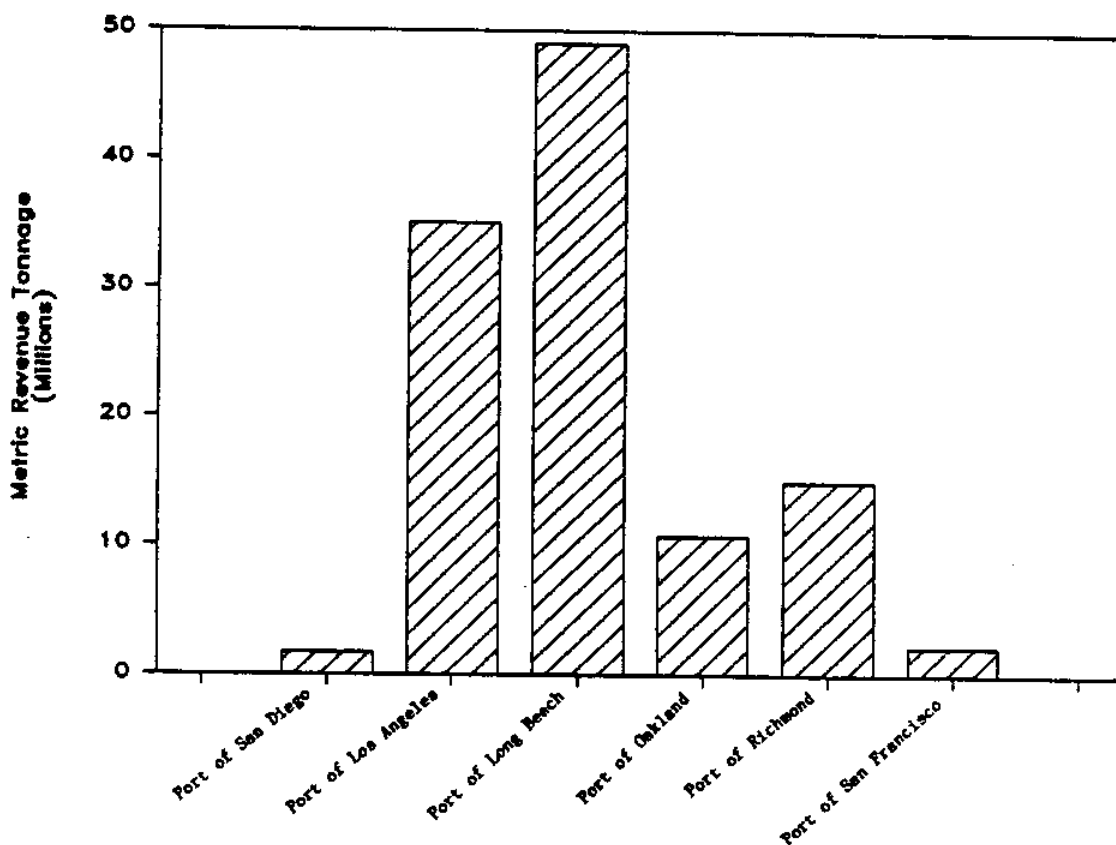
1)Richmond figures are for city-owned terminals only.

2)Includes \$10.9 million from commercial operations.

Source: Annual reports and interviews with staffs of various port authorities.

EXHIBIT 2-3

MARITIME CARGO FLOWS THROUGH MAJOR CALIFORNIA SEAPORTS
(fiscal year 1981-1982)



METRIC REVENUE TONNAGE

San Diego	1,744,539	Oakland ¹	10,715,991
Los Angeles	35,083,913	Richmond ²	14,967,658
Long Beach	49,007,140	San Francisco	2,194,000

1

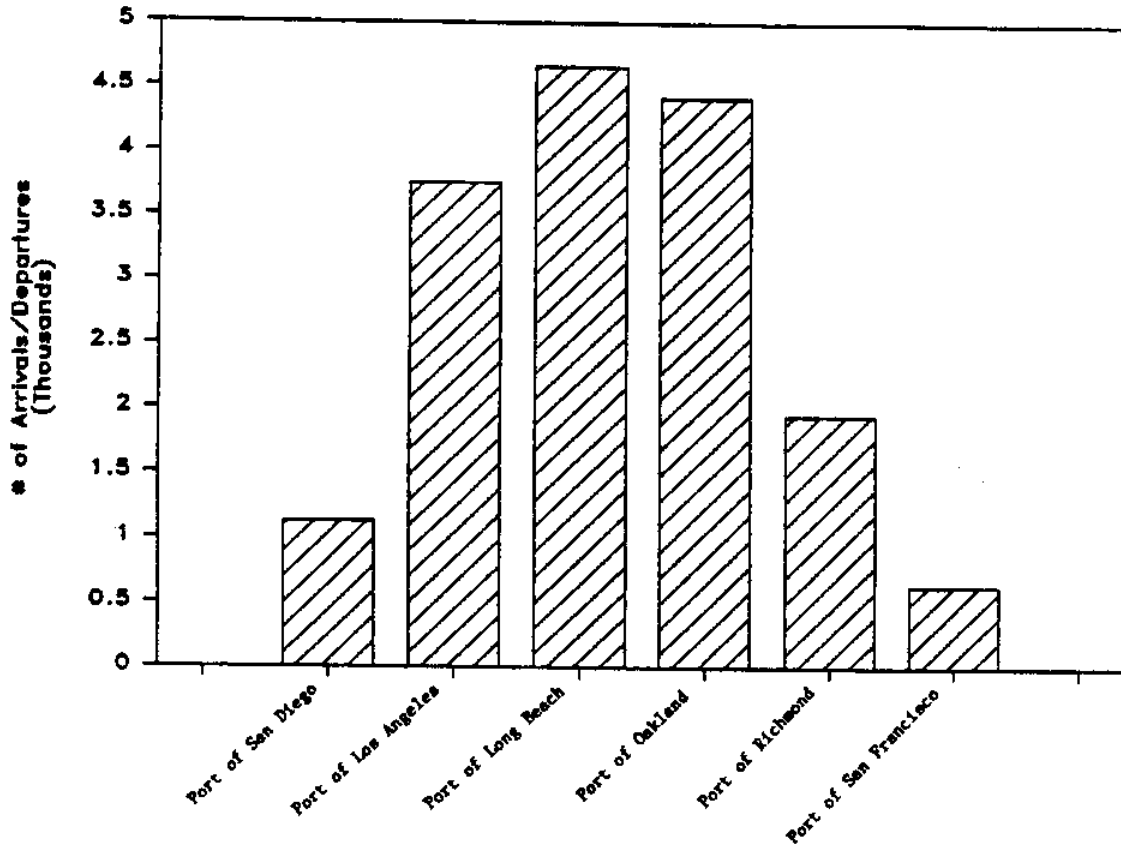
Oakland figures are given for calendar year 1981.

2

Richmond figures represent metric weight tonnage which may be slightly lower than metric revenues tonnage and include cargo moved through private and public facilities.

EXHIBIT 2-4

VESSEL ARRIVALS/DEPARTURES AT CALIFORNIA SEAPORTS
(fiscal year 1981-1982)



OF VESSEL ARRIVALS/DEPARTURES

San Diego	1,128	Oakland ¹	4,416
Los Angeles	3,750	Richmond ²	1,953
Long Beach	4,658	San Francisco ³	639

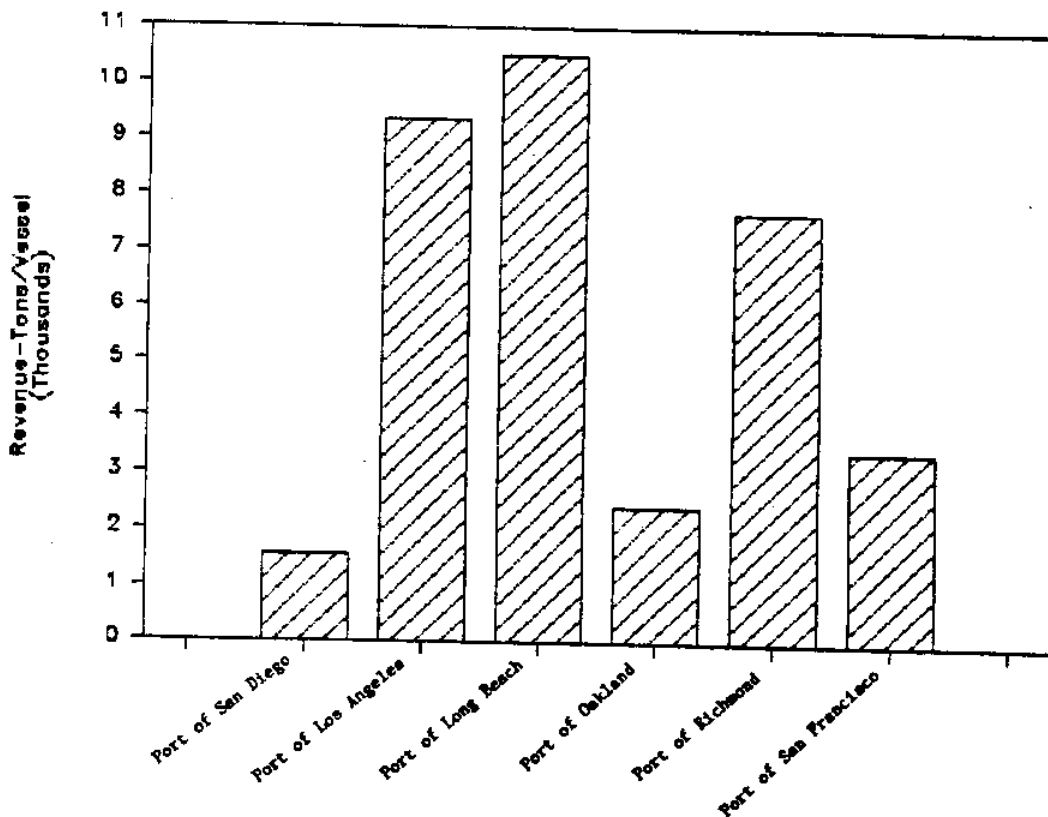
1
Oakland figures are given for calendar year 1981.

2
Richmond figures include arrivals at public and private terminals.

3
San Francisco figures do not include the fishboats at Fishermen's Wharf, which average approximately 160 local boats and 20 transient boats.

EXHIBIT 2-5

REVENUE TONS PER VESSEL ARRIVAL AT MAJOR CALIFORNIA SEAPORTS
(fiscal year 1981-1982)



METRIC REVENUE-TONS PER VESSEL

San Diego	1,546.58	Oakland	2,426.63
Los Angeles	9,355.71	Richmond	7,703.37
Long Beach	10,521.06	San Francisco	3,433.49

CHAPTER III
AN ECONOMIC PROFILE OF
CALIFORNIA'S SIX MAJOR SEAPORTS

The six major commercial seaports discussed in this chapter handle over 90% of California's inbound and outbound waterborne cargo. Other California ports that receive waterborne cargo deal primarily with barge traffic and handle inbound and outbound cargo that enters or leaves California through one of the six major seaports discussed here.

The type of information presented in this chapter about each major seaport is similar and is arranged in a similar format in the section describing each seaport. The profile of each seaport has four parts: 1) a general description of the port which identifies major port-dependent and port related industries and recent trends in industry and commerce, 2) a summary of port administration and decision making procedures including summaries of port operating costs and revenue sources, 3) an outline of existing port facilities associated with oceanborne shipping, and 4) an outline of major port development projects that are either underway or planned.

PORT OF SAN DIEGO

Location and General Description

The port of San Diego is located on a landlocked, crescent-shaped bay which is approximately 23 square miles in size and has a 14 mile coastline. There are 10,529 acres of surface water in the bay, and 4,422 acres of tidelands around it.

Parcels of San Diego Bay tidelands are owned or controlled by the federal government, the State of California, the County of San Diego, the cities of San Diego and Coronado, and the San Diego Unified Port District. (See Exhibit 3-2.) The land contingent to the Bay is utilized primarily for commercial and industrial purposes as shown in Exhibit 3-3.

Because the city of San Diego is located only 100 miles south of the "super-ports" of Los Angeles and Long Beach, the Port of San Diego is not heavily involved in marine commerce. Water-related recreation and tourism has flourished in the San Diego Bay tidelands and become a significant factor in the local economy. The Navy, Coast Guard and Marine Corps occupy a large portion of the Bay and tidelands and nearly one-third of the U.S. Navy fleet is based in San Diego. Military expenditures contribute greatly to both port revenue and the local economy.

Commerce

The port of San Diego handled 1,744,539 metric revenue tons of cargo in FY 1981-82 and was a net exporter with the rest of the world. (See Exhibit 3-4.) Over 65% of San Diego's inbound cargoes come from other U.S. ports and include fish and fish

preparations, molasses, lumber, coal and coke, petroleum and petroleum products, manufactured chemicals, newsprint, mineral manufactures, cement and ores. Major outbound commodities include bulk cereal grains, copper ore concentrates, inorganic chemicals, fertilizers, iron and steel scrap, and wheat. A precise listing of commodities moved through the Port of San Diego is provided in Exhibit 3-4.

Commercial activity in the port is small relative to the ports of Long Beach and Los Angeles. In FY 1981-82, local tuna vessels accounted for 71% of all vessel arrivals and "commercial" vessels (those carrying cargo or passengers) accounted for only 19% of vessel arrivals. Exhibit 3-5 provides a summary breakdown of vessel arrivals at the Port of San Diego.

Port Administration

The Port of San Diego is under the jurisdiction of a public corporation called the San Diego Unified Port District. The expressed purpose of the Port District is to promote development of "commerce, navigation, fisheries, and recreation on San Diego Bay." and the Port District includes corporate areas of the cities of San Diego, Chula Vista, Coronado, National City and Imperial Beach. The Port District is operated by a seven-member Board of Port Commissioners representing various municipal areas.

The San Diego Port District functions primarily as a "landlord." 58% of its revenue is from rentals of land and facilities to commercial and industrial firms, hotels and restaurants, and the San Diego International Airport. Other important revenue sources are concessions and interest income. (See

Exhibit 3-6.) The Port of San Diego is financially healthy, and during FY 1982, net reserves increased to \$42.1 million, an increase of 55% over the previous fiscal year. To date, no tax levy has been required to finance port operations.

Port Facilities

The San Diego Unified Port District has three main terminal facilities and Exhibit 3-7 describes terminal berthing spaces, water depths and storage areas, etc. A modern cruise ship facility is planned for passenger and baggage handling on the "B" Street Pier which, along with a proposed convention center and downtown development, could dramatically change the complexion of the San Diego port.

The Tenth Avenue Marine Terminal is the center of San Diego's commercial shipping activity. The complex occupies 96 acres and features warehouses and transit sheds with over 1.2 million square feet in storage space and 800 feet of berthing space for bulkloading operations. A high speed bulk loader with a capacity of more than 2000 short tons per hour is located at the Tenth Avenue Terminal and is one of the fastest bulkloaders on the west coast. A bunkering depot, large molasses storage tanks, and other bulk liquid storage facilities are included in the complex and bulk commodities can be bagged at an adjacent bagging facility.

Three miles south of the Tenth Avenue Terminal is the National City Marine Terminal. This 125-acre complex houses the lone San Diego container crane and a storage area for 2,280

containers; the container crane is rarely used since the port handles no waterborne container traffic. A privately owned cold storage facility is available at the terminal with 13,662 square feet of freezer space and 2,079 square feet of cooler space.

The Port of San Diego has railway connections with the Atchison, Topeka and Santa Fe (ATSF) Railway and the San Diego & Arizona Eastern Railway and nearby freeways include Interstate Highways 5, 15 and 805. For purposes of shipping and intermodal transit, however, San Diego is awkwardly situated in the extreme southwest corner of the country, and compared to Los Angeles and San Francisco areas, has poor links with inland industries and markets.

Major Planning

Current building projects on Port District tidelands include an 1100 room hotel complex with a 450-slip marina on the San Diego waterfront and a 600-slip marina that will eventually be expanded to 1000 slips in Chula Vista. The Port District is also directly involved in the construction of a 192,000 square ft. warehouse with connecting railroad spurs and a 420 foot commercial fishing pier, both in National City.

The Port District is actively involved in revitalizing the "B" Street Pier into a shopping mall and cruise ship terminal. The planned project on a nine-acre site will be bigger than Ghirardelli Square in San Francisco or San Diego's new Seaport Village.

San Diego voters recently voted approval of the Port's plan to build a \$95 million convention center complex on port land

near Seaport Village. This eleven-acre project will be funded entirely by revenue from port leases, revenues from investments by the Port District, and through room taxes from the various hotels.

REFERENCES

For Additional Information About THE PORT OF SAN DIEGO

A Complete Guide to the Port of San Diego (San Diego: Port of San Diego, n.d.).

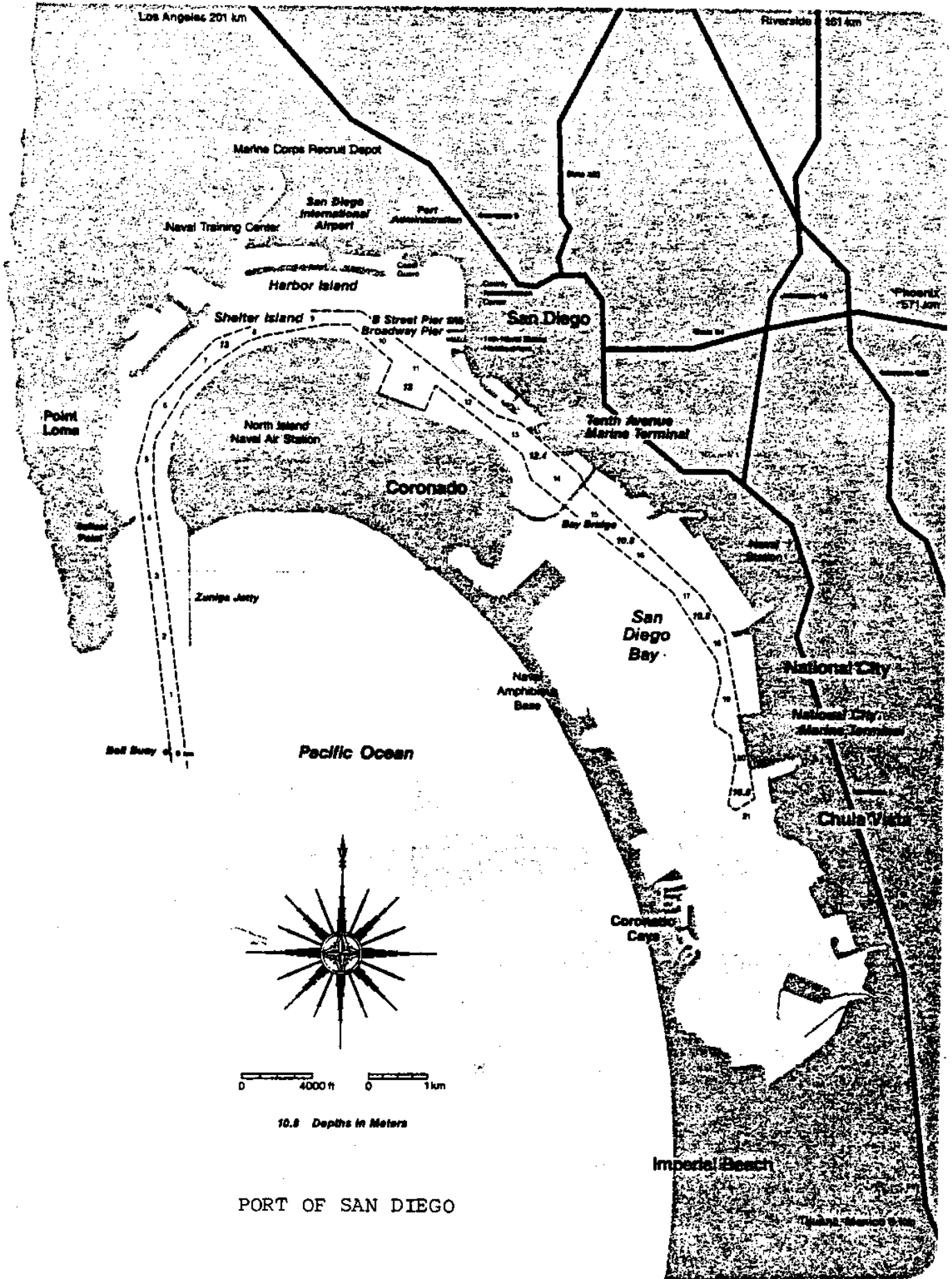
San Diego Unified Port district (SDUPD), Planning Department, Port Master Plan: San Diego Unified Port District, (San Diego: SDUPD, 1980).

SDUPD, The San Diego Unified Port District: What It Is and What It Does, (San Diego: SDUPD, n.d.).

San Diego Unified Port District Act (Stats. 1962, 1st Ex. Sess., c. 67, as amended by Stats. 1963, c. 673, Stats. 1965, c. 349, Stats. 1965, c. 577), secs. 1-88.

San Diego Unified Port District, Executive Summary: B Street Pier Cruise Ship Terminal Study, Irvine, CA 1982 (prepared by Williams-Kuebelbeck and Associates, Inc.).

EXHIBIT 3-1



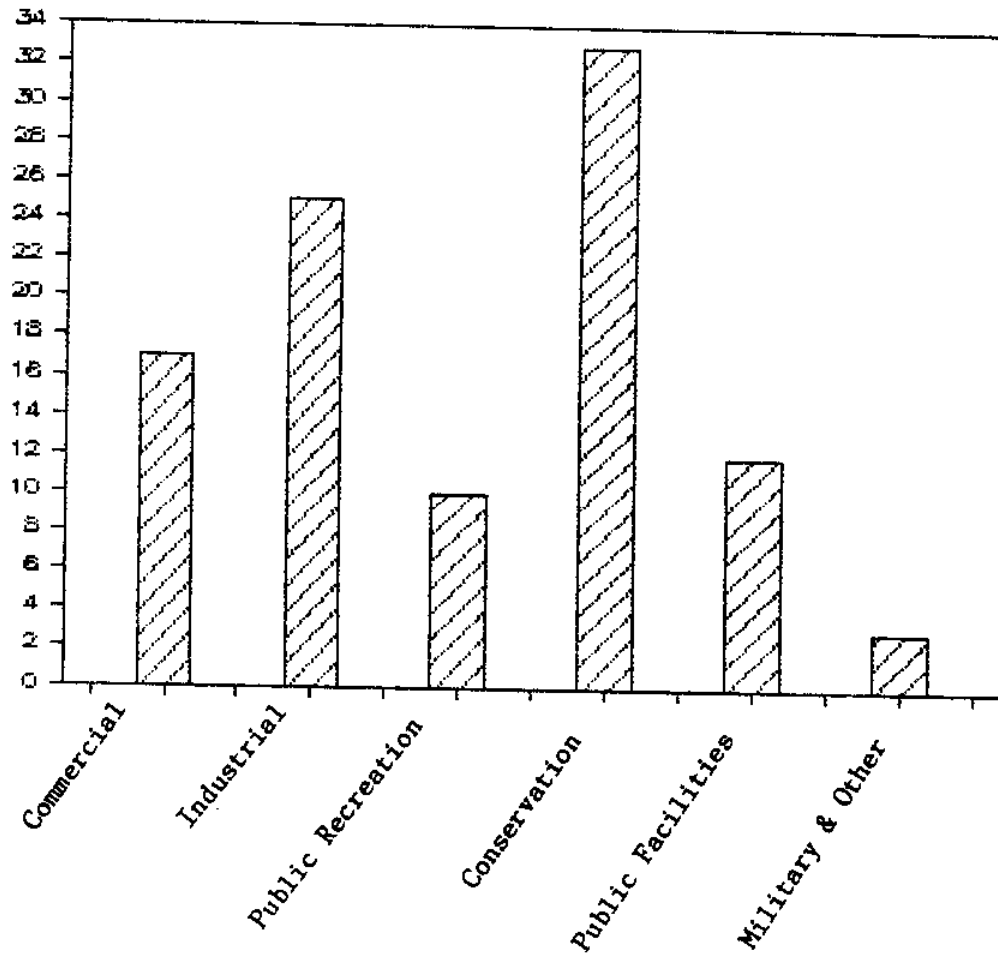
PORT OF SAN DIEGO

EXHIBIT 3-2
 DISTRIBUTION OF TIDELANDS OWNERSHIP AT
 THE PORT OF SAN DIEGO

<u>Owner</u> -----	<u>Acreage</u> -----	<u>Percent of Total</u> -----
Federal	2,932	19.8 %
State of California	6,502	43.0
County and City	34	0.2
San Diego Unified Port District	5,483	37.0
	-----	-----
Total	14,951	100.0 %

Source: SDUPD, Planning Department, Port Master Plan: San Diego Unified Port District (San Diego: SDUPD, 1980), p. 8.

EXHIBIT 3-3
 UTILIZATION OF TIDELANDS AT
 THE PORT OF SAN DIEGO

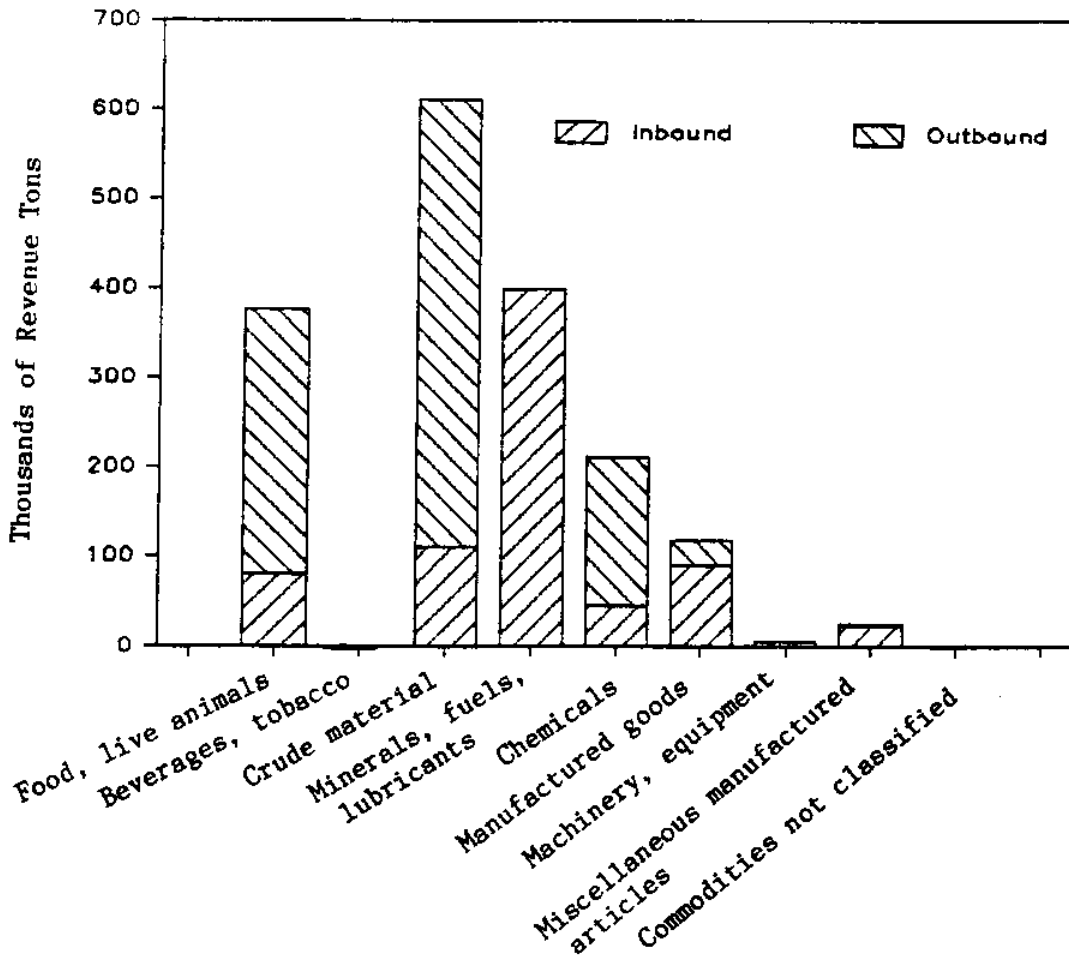


Use	Acreage	Percent of Total
Commercial	905	17 %
Industrial	1,367	25
Public Recreation	554	10
Conservation	1,818	33
Public Facilities	675	12
Military & Other	164	3
Total	5,483	100 %

Source: SDUPD, Master Plan, p. 17.

EXHIBIT 3-4

MARITIME CARGO FLOWS AT THE PORT OF SAN DIEGO - 1982*



<u>Category</u>	<u>Revenue Tons</u>	
	<u>Inbound</u>	<u>Outbound</u>
Food, live animals	79,950	296,653
Beverages, tobacco	55	0
Crude material - inedible	110,207	501,401
Minerals, fuels, lubricants	398,753	0
Chemicals	45,021	165,619
Manufactured goods by material	90,412	27,379
Machinery/transportation equipment	5,377	94
Miscellaneous manufactured articles	22,341	1,090
Commodities not classified	186	1
Total	752,302	992,237

*Virtually all outbound cargo from the Port of San Diego was foreign cargo; inbound cargo consisted of 29% foreign cargo, 67% domestic cargo and 4% in-transit cargo.

EXHIBIT 3-5
VESSEL ARRIVALS AT THE PORT OF SAN DIEGO

Fiscal Year 1981-82

<u>Type</u>	<u>Number</u>	<u>Percent of Total</u>
Tuna	799	71 %
Navy, Coast Guard*	61	5
Bulk carriers	111	10
Barges	62	6
Tankers	16	1
Passenger	7	1
Research	23	2
Container	10	1
Other	39	3
Total	1128	100 %

*Includes all foreign navy vessels; excludes arrivals at San Diego Navy facilities.

EXHIBIT 3-6
 REVENUE SOURCES
 FOR SAN DIEGO UNIFIED PORT DISTRICT

Fiscal Year 1981-82

<u>Source</u>	<u>Revenue</u>
Dockage	825,829
Wharfage	1,179,209
Pier Storage & Space Rental	659,293
Headhouse & Office Space Rent	71,365
Utilities Furnished	170,407
Bunkering	53,589
Bulkloader Service Charge	503,594
Demurrage	4,553
Minor Piers & Floats	64,094
Container Crane Use Charge	133,237
Container EQ Use Charge	13,805
Landing Fees--Scheduled	2,979,657
Landing Fees--Non-Scheduled	62,179
Fuel Franchise Revenue	103,607
Flat-Fee Ground Rentals	7,086,802
Percentage Ground Rentals	7,138,332
Building Rentals	4,271,394
Concession Income	6,172,781
Sale of Surplus Items	7,461
Damages Recovered	41,945
Interest Income	7,673,927
Grants in Aid	1,189,655
Misc. Other Revenue	808,701
Ground Transportation Permits	167,000
Citation Revenue	144,038
Mooring Fees	6,465
Discounts Earned	6,513
Graving Dock Income	848,726
Parking Meters	200,285
Total	42,588,443

EXHIBIT 3-7

SAN DIEGO PORT FACILITIES

TERMINALS

Name	Berths			Transit Sheds	
	Berth Number	Berthing Space (meters)	Depths at MLLW (meters)	Number	Area (sq. m.)
B Street Pier	3	122	10.6/11.3	2	22,682
	1,2	305	10.6/11.3		
	4,5	305	10.6/11.3		
Broadway Pier	3	40	10.6		
	1,2	305	10.6		
	4,5	305	10.6		
Tenth Avenue Marine Terminal Berths 1 & 2	1,2	341	8.2/10.6		
Tenth Avenue Marine Terminal Berths 3, 4, 4a, 5 & 6	3,4,4a,5,6	786	11.3/10.6	2	36,003
Tenth Avenue Marine Terminal Berths 7 & 8	7,8	198	10.6/6.4/11		
National City Marine Terminal North Wharf	1,2	427	6.1/10.6	1	3,746
National City Marine Terminal West Wharf	3,4	305	10/11.3		
National City Marine Terminal South Wharf	10,11	457	10.6/11.3		
Total		3,742			62,431

SPECIALIZED BERTHING

Pier	Berthing Space (meters)	Depths at MLLW (meters)
Embarcadero	472	5.5
Tunaboat Pier No. 1	171	5.5
Tunaboat Pier No. 2	171	5.5
Standard Oil Co. Pier	155	5.5
G Street Pier (Tuna Vessels) West Side	278	8.5

Source: Port of San Diego, Trade Development Department, A Complete Guide to the Port of San Diego (San Diego: Port of San Diego, n.d.), p. 5.

PORT OF LOS ANGELES

Location and General Description

The Port of Los Angeles is a man-made harbor located on San Pedro Bay approximately 23 miles south of the business center of the City of Los Angeles. Los Angeles and Long Beach Harbors are divided by a political boundary, but form a single geographic and economic water terminal entity and serve the same inland regions.

Los Angeles Harbor is composed of an Outer Harbor with water depths ranging from 40 to 51 feet and an Inner Harbor with a water depths of about 35 feet. The Outer Harbor shoreline consists mainly of the city of San Pedro and Terminal Island while the Inner Harbor is bordered completely by the Wilmington District. There are 3,015 acres of tidelands and 4362 acres of surface water in the Port. About 99% of port land is reserved for public use under the Tidelands Grant and the remainder belongs to Southern Pacific Railroad and U.S. Borax. One-third of port area tidelands is used for general cargo operations including container, unit, break-bulk, neo-bulk, and passenger facilities. Exhibit 3-9 provides a summary of land utilization in the Port of Los Angeles.

Commerce

During 1982, The Port of Los Angeles handled 35,083,913 metric revenue tons of cargo. 40% of this was bulk petroleum and the other major foreign imported commodities included road vehicles, vegetables and fruit, manufactured metals, cork and wood, rubber and plastic articles, textile yarn and fabrics, and

metal ore and scrap. The leading export commodities from Los Angeles to the world are metal ore and scrap, crude minerals, textile fiber and waste, vegetables and fruit and inorganic chemicals. Exhibit 3-10 provides a breakdown of major imports and exports passing through the Port of Los Angeles during 1981.

Revenue tonnage for Los Angeles by cargo type and by world region are provided in Exhibits 3-11 and 3-12, respectively. Trade with the Far East accounted for 76% of the total foreign tonnage in FY 1982 and trade with the rest of the world during that year was down 8% from the previous year.

Vessel arrivals/departures at the Port of Los Angeles during 1981 by vessel types are shown in Exhibit 3-13. Cargo and tanker vessels accounted for over half of the ship traffic during 1981 and the total number of vessel arrivals was down 11% from the previous year. This reflects the slump in oceanborne commerce brought by the worldwide recession and does not reflect a decline in the competitive position of the Port of Los Angeles.

Port Administration

The Port of Los Angeles is managed through the Los Angeles Harbor Department. A five member Board of Harbor Commissioners, appointed by the mayor and subject to City Council approval, oversees port operations and development policy. The port operates on its own revenues and bonds for capital funds and has never required a tax levy.

Gross revenues and net income in FY 1982 increased over the previous fiscal year despite a worldwide shipping slump. 68% of the gross operating revenues were generated from shipping

services and rentals of land and facilities to private operators accounted for another 25%. A summary of port revenues by source during FY 1982 is provided in Exhibit 3-14.

Port Facilities

The Port of Los Angeles is equipped to handle passengers, general cargo, automobiles, dry bulk, liquid bulk, steel, lumber and containers and has extensive shipbuilding and repair facilities. The port has six major container terminals and ten general cargo terminals which are described Exhibit 3-15. There is a total of 35 terminals and 17 warehouses operating within the 7000-acre harbor area.

Sixteen high-speed container cranes handle more than eight million revenue tons of cargo a year at container terminals located throughout the port. The American President Lines Terminal is a combination container, break bulk and passenger facility and The Indies Terminal, the largest break bulk facility on the West Coast, is currently being reconstructed to handle containers and break bulk from the same berth.

Cargo is moved between the Port of Los Angeles and all points in the U.S. via truck and rail transport systems. The port is in close proximity to three major freeways and three railroads (Southern Pacific, Union Pacific, and Atchison, Topeka and Santa Fe).

Major Planning

The Port of Los Angeles has formulated a \$500 million Capital Development Project spanning the next five years. A major dredging project will deepen the channels and slips to 45 feet and the 14 million cubic yards of dredge material will be used to create a landfill on Terminal Island where construction of a new coal exporting terminal is planned. Construction has already begun on the American President Lines container terminal which will be the largest single-user container facility on the west coast and will have the capacity to handle and store 4,000 40-foot containers. The American President Lines Terminal will also house an expanded cruise ship facility and the terminal will be able to berth five vessels at the same time. An additional wharf is being built and the terminal building is being enlarged and improved, and up to 2000 parking spaces are being added.

The Ports of Los Angeles and Long Beach, along with the Southern Pacific Railroad, are planning a joint venture to construct an Intermodal Container Transfer Facility about two miles north of the harbors. This innovation will greatly reduce handling costs and the time required to move inbound container cargo overland to inland destinations. A multi-purpose facility for break-bulk and container cargoes is planned at the reconstructed and expanded Indies Terminal and an LNG terminal and a new tanker terminal are also under consideration. The \$56 million West Channel/Cabrillo Beach Recreational Complex which includes a marina basin, a youth camp and a salt marsh, is now underway.

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For Additional Information About THE PORT OF LOS ANGELES

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Los Angeles Harbor Department, Planning & Research, Container Terminals: Facilities & Services (San Pedro: Port of Los Angeles, 1982).

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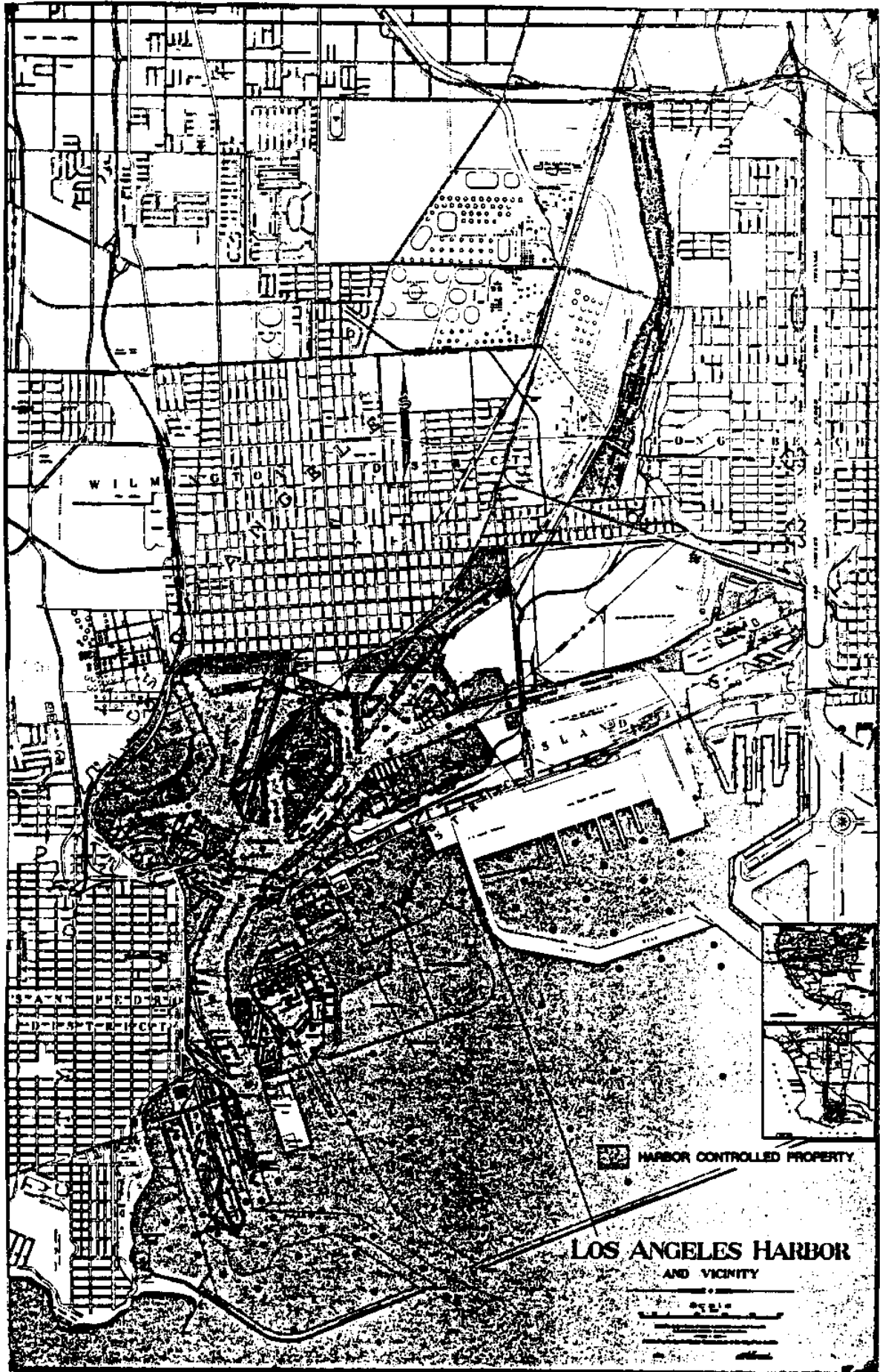
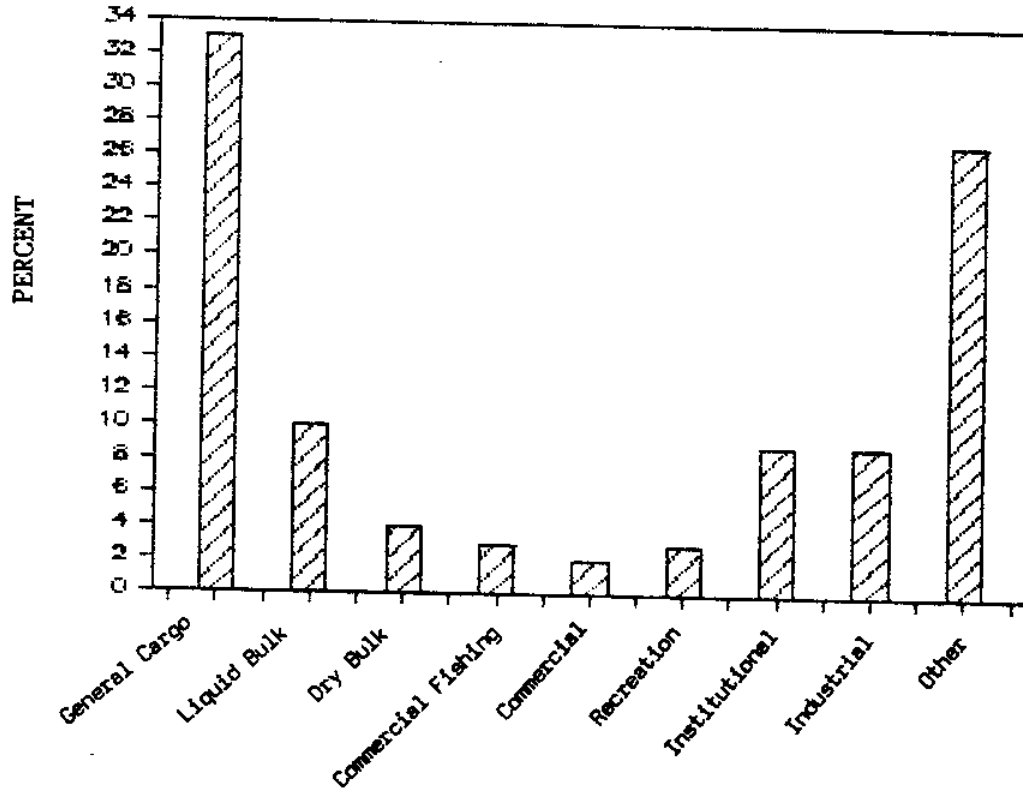


EXHIBIT 3-9

LAND UTILIZATION AT THE PORT OF LOS ANGELES



<u>Category</u>	<u>Acres</u>	<u>Percent of Total</u>
General Cargo	859	33 %
Liquid Bulk	269	10
Dry Bulk	103	4
Commercial Fishing	79	3
Commercial	55	2
Recreation	68	3
Institutional	233	9
Industrial	238	9
Other	713	27
Total	2617	100 %

EXHIBIT 3-10

MAJOR IMPORTS AND EXPORTS THROUGH
THE PORT OF LOS ANGELES - 1982 (M. TONS)

MAJOR IMPORTS		MAJOR EXPORTS	
Commodity	Tonnage (000)	Commodity	Tonnage (000)
Road vehicles	315	Metal ore/scrap	578
Vegetables & fruit	274	Crude minerals	473
Metal manufactures	255	Textile fiber/waste	283
Nonmilitary mineral manufactures	121	Vegetables & fruit	192
Cork and wood	115	Inorganic chemicals	184
Telecommunications/hi-fi equip.	87	Pulp and waste paper	151
Sugar and honey	78	Rawhides and skins	114
Fish and fish products	76	Animal feed	112
Clothing and accessories	67	Meat and meat products	94
Rubber manufactures	63	Cereals and preparations	68
Beverages	60	Plastic resins/materials	67
Textile yarn/fabrics	60	Industrial machinery	65
Metal ore/scrap	58	Fixed vegetable oils	42
Cork and wood manufactures	58	Organic chemicals	39
Electric appliances	54	Petroleum products	23
Metalworking machines	47	Cork and wood manufactures	21
Chemicals and chemical products	45	Nonferrous metals	21
Power generators	44	Iron and steel	20
Furniture and parts	41	Misc. chemical products	19
Footwear	40	Paper/paperboard	18
Plastic resins/materials	31	Metal manufactures	16
Paper/paperboard	31	Road vehicles	15
Meat and meat products	31	Transportation equipment	10
Coffee, tea and spices	30	Misc. edible products	10
		Textile yarn/fabrics	10
Total	2081	Total	2645

EXHIBIT 3-11

REVENUE TONNAGE BY CARGO TYPE AT
THE PORT OF LOS ANGELES - 1982 (M. TONS)

<u>Cargo Type</u>	<u>Tonnage</u>
General Cargo	
Merchandise by Weight	1,573,005
Merchandise by Cube	3,372,501
Merchandise by Bulk	91,428
Scrap Metal-Bulk	482,199
Bananas	217,823
Building Modules	9,699
Cargo Vans-Merchandise	1,809,150
Cargo Vans-Empty	174,738
Waste Paper	103,383
Borax	67,440
Synthetic Resins	76,038
Fresh Fruit	112,699
Metals-Loose	1,042,177
Liquids (excluding petroleum)	418,606
Autos & Commercial Vehicles	376,269
Fish	116,274
Coal/Coke	2,943,940
Special Merchandise	746,063
Lumber	72,035
Paper & Paper Products	17,147
Hides & Skins	47,586
Scrap Metal in Vans	47,041
Miscellaneous Tariff Items	336,746

Subtotal General Cargo	14,253,987
Petroleum	
Bulk Oil	14,025,759
Bunkers in Port	6,804,167

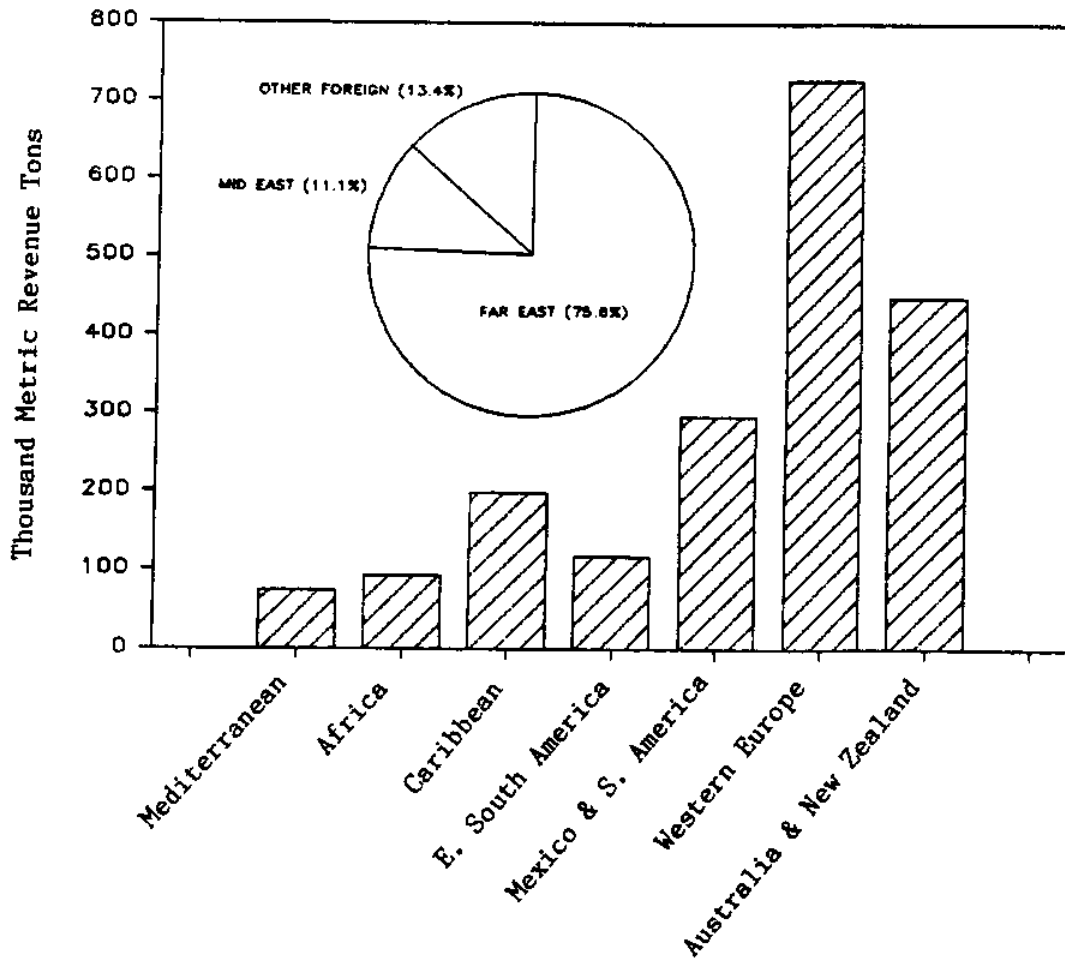
Subtotal Petroleum	20,829,926

TOTAL	35,083,913

Source: Port of Los Angeles, Harbor Department Staff, 1982 Annual Report (San Pedro: Port of Los Angeles, 1982), p. 14.

EXHIBIT 3-12

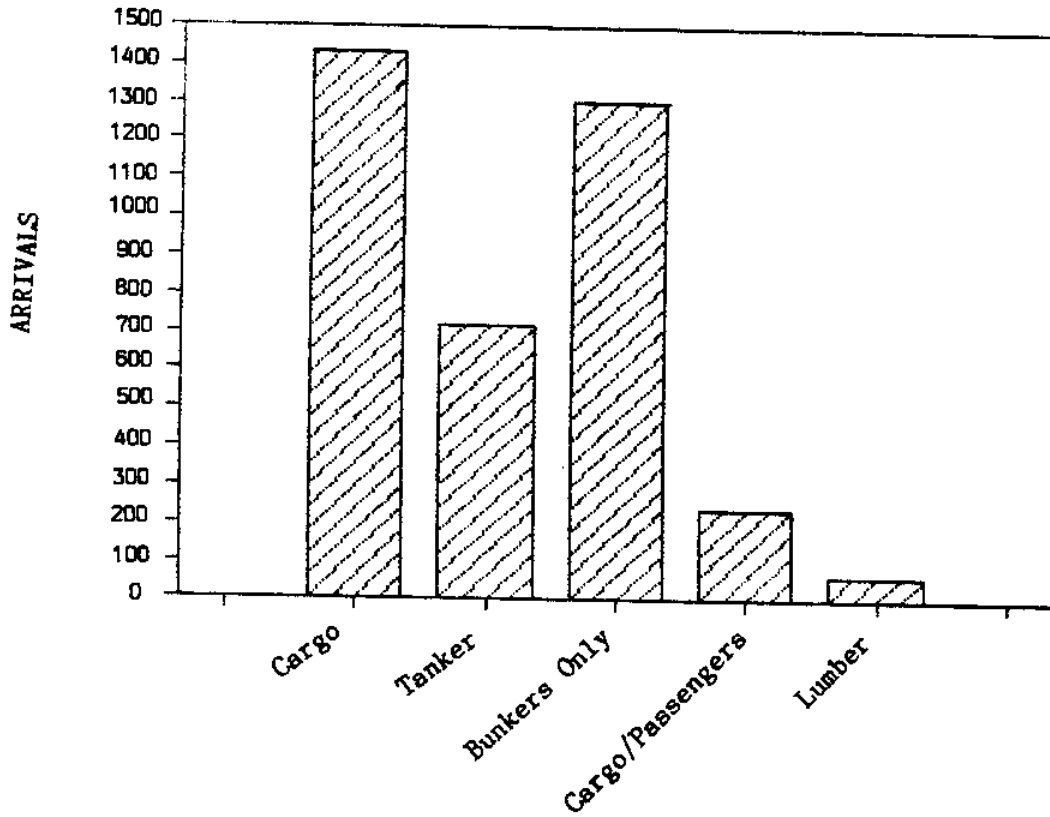
FOREIGN TRADE BY WORLD REGION
THROUGH THE PORT OF LOS ANGELES - 1981
(Revenue Tons)



<u>Region</u>	<u>Metric Revenue Tons</u>
Mediterranean	74,377
Africa	92,115
Far East	11,009,426
Caribbean	187,262
Eastern South America	116,937
Mexico & South America	296,316
Western Europe	726,209
Australia & New Zealand	448,303
Persian Gulf & Red Sea	1,610,192
TOTAL	14,571,137

EXHIBIT 3-13

VESSEL ARRIVALS AT THE PORT OF LOS ANGELES - 1982



<u>Type</u>	<u>Arrivals</u>	<u>Percent of Total</u>
Cargo	1429	38.1 %
Tanker	716	19.1
Bunkers only	1301	34.7
Cargo/Passengers	240	6.4
Lumber	64	1.7
Total	3750	100.0 %

Source: Port of Los Angeles, 1982 Annual Report, p. 13.

EXHIBIT 3-14

REVENUE SOURCES FOR THE PORT OF LOS ANGELES - 1982

<u>Source</u>	<u>Revenues</u>
Shipping Services	
Dockage	\$ 6,078,469
Wharfage	33,970,419
Storage	321,217
Demurrage	670,620
Pilotage	2,374,092
Assignment charges	920,736
Wharf & shed revenue	765,585
Cranes	2,313,830

Subtotal Shipping Services	\$47,414,968
Rentals	
Land	\$15,028,624
Buildings	371,205
Warehouses	1,983,160

Subtotal Rentals	\$17,382,989
Other Operating Revenues	
Fees, concessions, royalties	\$ 1,143,715
Oil Royalties	3,408,903
Other	442,632

Subtotal Other	\$ 4,995,250
Interest Income	\$14,468,525

TOTAL	\$84,261,732

Source: Port of Los Angeles, 1982 Annual Report, p. 9.

EXHIBIT 3-15

CONTAINER TERMINALS AT THE PORT OF LOS ANGELES

<u>Terminal</u>	<u>Berth Number</u>	<u>Total Wharf Length (meters)</u>	<u>Water Depth at Berth (meters)</u>	<u>Container Storage Area (Acres)</u>	<u>Container Freight Station (sq. meters)</u>
American President Lines	87-88	243.5	10.7	39	19,565
Los Angeles Container	127-129	305	12.1	43	--
Matson	206-209	668	13.7	60	5,767
Overseas	228-231	769	13.7	35	13,080
Seaside	232	243.8	13.7	39	--
Evergreen	233-236	390	13.7	23	--
Total		2,619.3		239	38,412

Source: Los Angeles Harbor Department, Planning & Research, Container Terminals: Facilities & Services (San Pedro: Port of Los Angeles, 1982), pp.4-5.

PORT OF LONG BEACH

Location and General Description

The Port of Long Beach is located on eastern San Pedro Bay two miles from the open sea. It is a man-made port encompassing 4.5 square miles of land and has 66 deep-water berths. Natural protection for San Pedro Bay is provided by the highlands of San Pedro Hills and the island of Santa Catalina and additional protection is provided by breakwaters. Like the Port of Los Angeles, the Port of Long Beach is equipped to handle large vessels and virtually all types of cargo. Ships move between the two ports across San Pedro Bay or through the 41-foot deep channel that connects their inner harbors.

During the past ten years, the Port of Long Beach has been the leader in handling foreign tonnage and general cargo tonnage for the western United States and it has the only Foreign Trade Zone in southern California. Port land covers an area of 1591 acres which is owned and operated by private corporations, the federal government, the Los Angeles County Flood Control District, and the Long Beach Harbor Department. Exhibit 3-17 shows the distribution of port land ownership and Exhibit 3-18 gives a complete breakdown of land and water use. Most land usage in port tidelands involves petroleum importing/exporting and oil production although Terminal Island has considerable U.S. Naval facilities. 41% of the surface water area is designated as navigational corridors.

Commerce

During FY 1982, 49,007,140 metric revenue tons of cargo valued in excess of \$21 billion moved through the Port of Long Beach. The leading trading partners by tonnage are Japan, Korea, Taiwan, Hong Kong, Indonesia, Australia, Netherlands, Belgium, Malaysia and Mexico. A breakdown of foreign trade through Long Beach by world region is shown in Exhibit 3-19.

Leading inbound cargoes are bulk petroleum, steel, bulk gypsum, electrical machinery and lumber with bulk petroleum the major share of outbound cargo. During 1981, Long Beach accounted for 63% of all west coast exports of petroleum and related products. Exhibit 3-20 shows the volume of inbound and outbound cargos for FY 1982 and a breakdown of vessel arrivals/departures by vessel type is provided in Exhibit 3-21.

Port Administration

The Port is owned by the City of Long Beach and administration of the Long Beach Harbor Department is vested in a five-member Board of Harbor Commissioners. Each commissioner is appointed by the mayor and approved by the City Council.

The port functions as a landlord and leases or assigns most docks, wharves, transit sheds and terminals to shipping or terminal companies. The major sources of income to the Harbor Department are shipping services (wharfage, dockage, etc.), leases and rentals, and utility services as shown in Exhibit 3-22.

Port Facilities

The Port of Long Beach has maintained its prominent position among international ports through a continuous program of reconstruction and expansion of port facilities. The port maintains 11 operation piers covering 45% of developed port space and these piers contain highly specialized equipment to handle all types of modern cargo. Berthing specifications and storage areas for breakbulk and general cargoes are shown in Exhibit 3-23. During 1981, the port constructed state-of-the-art facilities to handle lumber and steel, ro/ro, and automobiles, and during the same year, a new cement terminal began operations with an annual handling capacity of 600,000 tons. The dry bulk and grain terminals described in Exhibit 3-24 were expanded and updated during 1981.

The port has a total of 12 transit sheds with a cumulative storage area of 159,767 square meters, five warehouses with a cumulative storage area of 46,699 square meters and over 400 acres of paved open storage. It also has a 430-acre container complex with 15 berths equipped with 19 gantry cranes and a new terminal with two general purpose cranes and 90 acres of container storage and handling facilities. Container terminals are described in Exhibit 3-25.

All major overland routes in the U.S. are served by the Port of Long Beach with inland transportation capabilities that are essentially identical to those of the Port of Los Angeles. Three major transcontinental railroads with direct dockside access allow efficient intermodal exchange and trucks have direct access

to berths from Southern California's freeway network.

Major Planning

The Port of Long Beach is currently developing an international coal export terminal scheduled for completion in 1984 and projected yearly exports through the terminal are 30 million tons. Long Beach plans to handle 25% of western U.S. coal exports and the expansion of the dry bulk facility for petroleum coke exportation will increase the Port's trade with developing nations. A waterfront entertainment complex, "Port Adventure," featuring the refurbished RMS Queen Mary, Howard Hughes' Flying Boat and an Old English theme village of shops and restaurants is being developed by the port along with a 1200 slip marina, cruise ship terminals and 1500 additional hotel rooms.

REFERENCES

For Additional Information About THE PORT OF LONG BEACH

Port of Long Beach, Your Harbor at a Glance (Long Beach: Port of Long Beach, n.d.).

Port of Long Beach, 1982 Annual Report (Long Beach: Port of Long Beach, 1982).

Port of Long Beach, Pocket Port Guide and Tide Tables (Long Beach: Port of Long Beach, 1983).

"Wrather Unveils Long-Range Plans for 'Port Adventure,'" Port of Long Beach Harbor Highlights, Vol. 4, No. 4, Summer 1981, pg. 19.

EXHIBIT 3-16

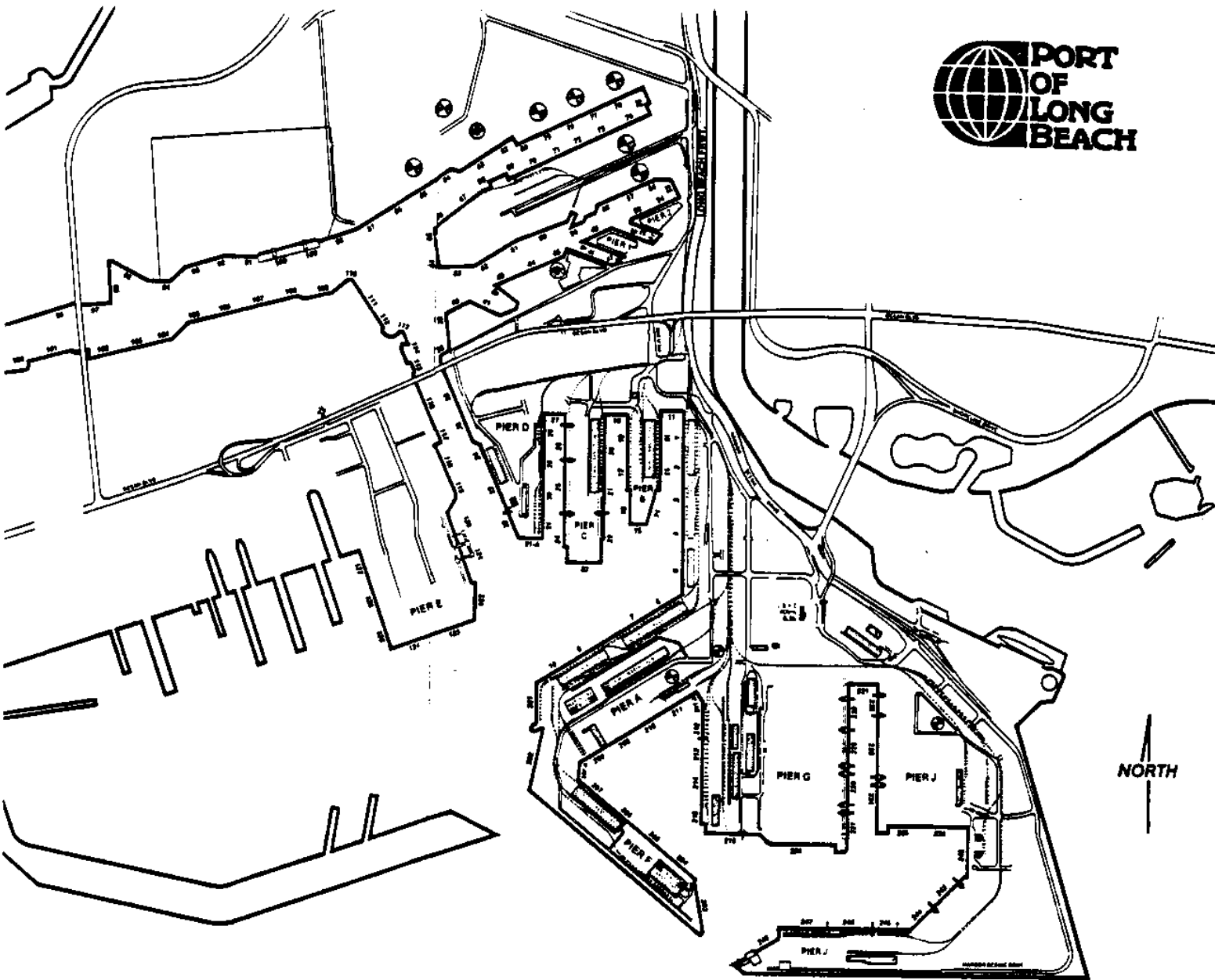


EXHIBIT 3-17

LAND OWNERSHIP AT THE PORT OF LONG BEACH

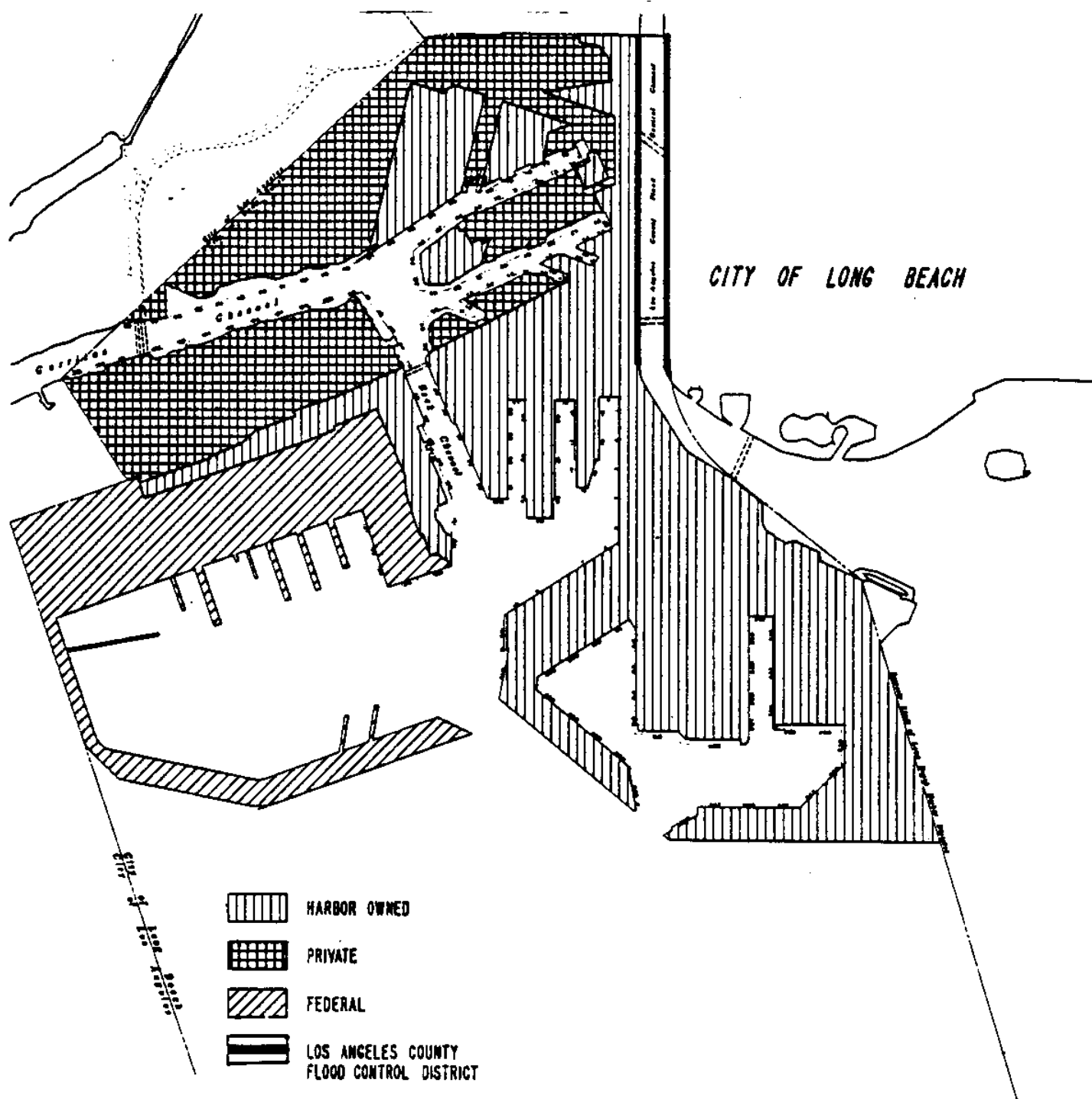
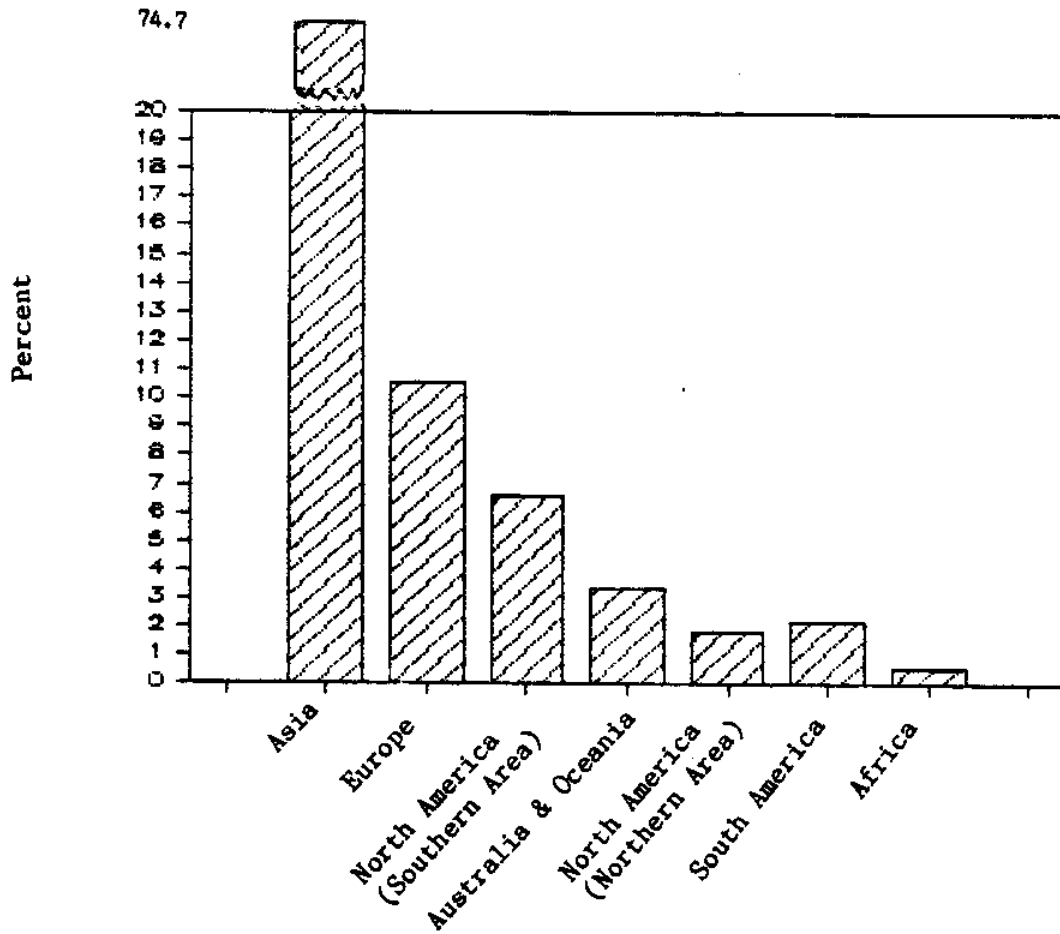


EXHIBIT 3-18
 LAND AND WATER UTILIZATION
 AT THE PORT OF LONG BEACH

<u>Category</u>	<u>Acres</u>	<u>Percent of Subtotal</u>
Land Use		
Primary Port	929	33 %
Petroleum Import/Export	64	2
Port Related	400	14
Commercial/Recreational	151	5
Federal Use	534	19
Oil Production	578	21
Utilities	81	3
Non-Port Related	74	3
Subtotal Land Use	<u>2,811</u>	<u>100 %</u>
Water Use		
Anchorage	1,636	36 %
Maneuvering	679	15
Navigation Corridors	1,848	41
Recreational/Sportfishing	341	8
Subtotal Water Use	<u>4,504</u>	<u>100 %</u>
Total	<u>7,315</u>	

EXHIBIT 3-19

FOREIGN CARGO BY WORLD REGION
FOR THE PORT OF LONG BEACH



<u>Region</u>	<u>Percent of Total</u>
Asia	74.7 %
Europe	10.6
North America (southern area)	6.6
Australia & Oceania	3.4
North America (northern area)	1.8
South America	2.2
Africa	.6
Total	100.0 %

Source: Port of Long Beach, Your Harbor at a Glance (Long Beach: Port of Long Beach, n.d.).

EXHIBIT 3-20

MAJOR IMPORTS AND EXPORTS
AT THE PORT OF LONG BEACH - 1981
(metric tons)

MAJOR IMPORTS

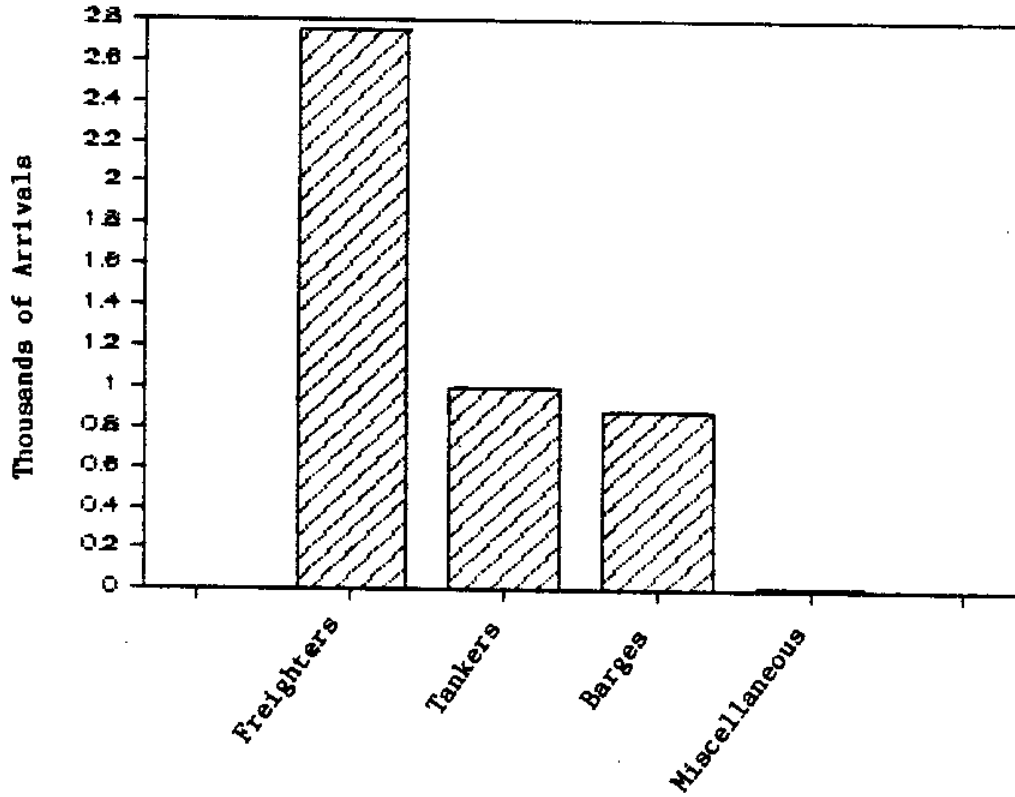
Commodity	Tonnage (000)
Crude minerals	702
Road vehicles	320
Vegetables and fruit	281
Metal manufactures	207
Telecommunications/hlft equip.	170
Paper/paperboard	165
Nonmetal mineral manufactures	146
Beverages	91
Clothing and accessories	86
Metal ore/scrap	84
Rubber manufactures	83
Electric appliances	75
Cork/wood manufactures	72
Cork and wood	70
Furniture and parts	70
Footwear	56
Fish and fish products	51
Textile yarn/fabric	43
Meat and meat products	30
Metalworking machinery	29
Plastic resin/material	27
Total	2858

MAJOR EXPORTS

Commodity	Tonnage (000)
Cereals and preparations	2,142
Petroleum and products	777
Pulp and waste paper	421
Vegetables and fruit	407
Inorganic chemicals	403
Textile fiber/waste	380
Fertilizer	147
Crude minerals	140
Plastic resin/material	127
Metal ore/scrap	117
Animal feed	113
Industrial machinery	77
Raw hides/skins	59
Meat and meat products	49
Organic chemicals	26
Nonferrous metals	25
Paper/paperboard	20
Chemical products	18
Road vehicles	18
Iron/steel	14
Total	5480

EXHIBIT 3-21

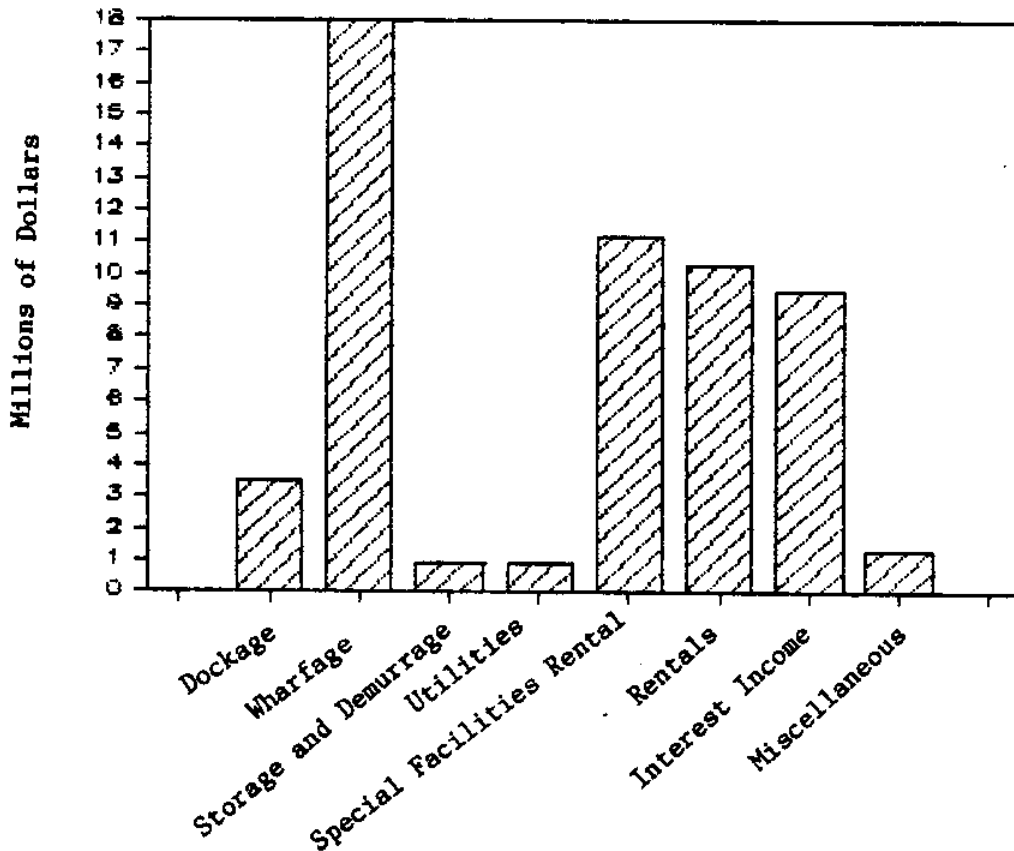
VESSEL ARRIVALS AT THE PORT OF LONG BEACH - 1982



<u>Type</u>	<u>Arrivals</u>	<u>Percent of Total</u>
Freighters	2,753	59 %
Tankers	997	21
Barges	888	19
Miscellaneous	20	1
Total	4,658	100 %

EXHIBIT 3-22

REVENUE SOURCES FOR THE PORT OF LONG BEACH - 1982



<u>Source</u>	<u>Revenue</u>
Dockage	\$ 3,491,106
Wharfage	17,956,411
Storage and Demurrage	906,342
Utilities	897,956
Special Facilities Rental	11,201,932
Rentals	10,273,434
Interest Income	9,464,106
Miscellaneous	1,356,175
Total	\$55,547,462

Source: Long Beach Harbor Department, Analysis of Operating Income by Type, July 1, 1981 to June 30, 1982 (Long Beach: Port Operations, 1982), p. 5.

EXHIBIT 3-23

BERTHING CAPACITY AT THE PORT OF LONG BEACH
BREAKBULK AND GENERAL CARGO

LENGTH OF BERTHS: APRON WIDTH: WHARF AREA: WHARF HEIGHT: AREA OF TRANSIT SHEDS (NET): LOADING PLATFORM AREA: OPEN STORAGE AREA: DESIGN DEPTH OF WATER AT BERTH: OTHER: TERMINAL OPERATOR: CARGOS HANDLED: SPECIAL FACILITIES/EQUIPMENT:	PIER A BERTHS 1-5 2,917 ft. 889 m 34 ft. 10.4 m 99,323 sq. ft. 9,227 m ² 78-25.4 ft. 2.3-7.7 m 251,971 sq. ft. 23,409 m ² 40,124 sq. ft. 3,728 m ² 298,054 sq. ft. 27,690 m ² 30 ft. 9.14 m Salem Shipping Agencies Citrus fruit, grapes, frozen cargoes Specialized equipment to handle unitized cargo supplies by stevedoring company.	PIER A BERTH 6 650 ft. 198.1 m 34-48 ft. 10.4-14.6 m 171,251 sq. ft. 15,910 m ² 8.3 ft. 2.5 m 115,200 sq. ft. 10,702 m ² 22,800 sq. ft. 2,118 m ² 554,534 sq. ft. 51,516 m ² 36 ft. 11.0 m Lumber yard 254,119 sq. ft. Forest Terminals Corp. Newsprint paper and lumber Served by self contained special vessels. Vacuum type forklifts for handling paper rolls.	PIER A BERTH 7 736 ft. 224.3 m 34-48 ft. 10.4-14.6 m 171,251 sq. ft. 15,912 m ² 8.7 ft. 2.7 m 115,200 sq. ft. 10,704 m ² 22,800 sq. ft. 2,118 m ² 102,900 sq. ft. 9,559.4 m ² 36 ft. 11.0 m Open berth Break bulk general Stevedoring equipment	PIER A BERTHS 9, 10, 201 2,000 ft. 610 m 34-48 ft. 10.4-14.6 m 85,926 sq. ft. 7,963 m ² 13.7-15.9 ft. 4.2-4.8 m 164,231 sq. ft. 15,257 m ² 33,750 sq. ft. 3,135 m ² 252,138 sq. ft. 23,424 m ² 36 ft. 11.0 m Cooper Stevedoring Co. Steel products and plywood Stevedoring equipment, forklifts up to 62,000 lbs. capacity, mobile cranes.
	PIER A BERTH 208 600 ft. 183 m 40 ft. 12.2 m 22,000 sq. ft. 2,044 m ² 19.1 ft. 5.8 m 50,000 sq. ft. 4,645 m ² 40 ft. 12.2 m Maximum beam without turning vessel 70 ft. 21 m Standard Fruit and S.S. Co.	PIER D BERTH 34 783 ft. 239 m 45 ft. 13.7 m 35,626 sq. ft. 3,310 m ² 13.8 ft. 4.2 m 66,715 sq. ft. 6,198 m ² 9,120 sq. ft. 847 m ² 17,775 sq. ft. 1,651 m ² 36 ft. 11.0 m Open berth Break bulk general, automobiles Stevedoring equipment	PIER E BERTH 122 800 ft. 183 m 22.7 ft. 6.9 m 470,000 sq. ft. 43,663 m ² 40 ft. 12.2 m Adjacent storage area: 21 acres 8.5 na Fremont Forest Products and Weyerhaeuser Co. Lumber and lumber products 150 ft. notched wharf to accommodate cargoes and lumber handling equipment. Moth H1. -12.7 ft.	PIER F BERTHS 204-207 2,467 ft. 751.9 m 50-150 ft. 15.2-45.7 m 248,700 sq. ft. 23,105 m ² 18.5 ft. 5.6 m 374,000 sq. ft. 34,745 m ² 9,000 sq. ft. 836 m ² 878,000 sq. ft. 81,569 m ² 32-36 ft. 9.8-11 m Steel Terminals, Inc. and Crescent Terminals Inc. Steel products and plywood Stevedoring equipment
	PIER 1 BERTHS 48-50 1,799 ft. 546 m 30-38 ft. 9.1-11.6 m 171 ft. 5.2 m 110,000 sq. ft. 10,220 m ² 3,300 sq. ft. 307 m ² 135,170 sq. ft. 12,558 m ² 36 ft. 11.0 m Open berth Break bulk general, steel products and heavy lifts Stevedoring equipment, floating cranes	PIER 2 BERTHS 52-54 1,298 ft. 396 m 30-38 ft. 9.1-11.6 m 38,355 sq. ft. 3,563 m ² 10.2 ft. 3.1 m 140,800 sq. ft. 13,062 m ² 8,450 sq. ft. 783 m ² 119,160 sq. ft. 11,070 m ² 36 ft. 11.0 m Star Terminal Co. Inc. Newsprint paper, lumber, shingles and pulp Special barges, vacuum type forklifts and heavy duty forklifts; additional storage available at warehouse: 108,675 sq. ft. covered and 107,000 sq. ft. open area.	BERTHS 82, 83 1,300 ft. 397.6 m 14.4 ft. 4.4 m 110 acres 44.5 na 38 ft. 11.6 m Toyota Motor Sales U.S.A. and Pasha Industries Automobiles Toyota: office building, processing building, bodyshop, car wash, truck bed installation building. Open storage: 55 acres. Pasha: office building, processing building, assembly building, bodyshop, dewax, truck maintenance building. Open storage: 55 acres.	

EXHIBIT 3-24

BERTHING CAPACITY AT THE PORT OF LONG BEACH
DRY BULK CARGOES

	PIER A BERTH 209	PIER A BERTHS 210, 211	PIER D BERTHS 28, 29	PIER D BERTH 31
LENGTH OF BERTHS:	550 ft 167.6 m	1,100 ft 335.3 m	993 ft 302.7 m	496 ft 151 m
WHARF AREA:		52,250 sq. ft. 4854 m ²		12 ft 3.7 m
WHARF HEIGHT:	19.2 ft 5.9 m	17.3 ft 5.3 m	10.5-10.9 ft 3.2-3.3 m	81,500 sq. ft. 7572 m ²
OPEN STORAGE AREA:	117,740 sq. ft. 10938 m ²	180,000 sq. ft. 16722 m ²		
DESIGN DEPTH OF WATER AT BERTH:	40 ft 12.2 m	45 ft 13.7 m	43 ft 13 m	43 ft 13 m
OTHER:		Covered Storage 2,225,000 bushels Design depth of water 9 ft. out 45 ft 13.7 m	Maximum beam of vessel without turning of ship. 75 ft	
TERMINAL OPERATOR:	Ocean Salt Co.	Agrex Inc.	Metropolitan Stevedore Co.	Open berth
CARGOS HANDLED:	Bulk salt	Bulk grain - corn, wheat, oat/alfa pellets, sorghum, soy bean	Borax, Petroleum coke, iron ore, potash, soda ash, coal fertilizer, sulfur coke	Steel and iron scrap, pig iron, steel slabs, ore, urea, bauxite, rullite sand.
SPECIAL FACILITIES/EQUIPMENT:	Movable inclined elevated electric belt conveyor system with receiving hopper extending from wharf to stock pile area. Packaging plant adjacent.	Rail Receiving - 40,000 bushels per hour, unloaded rate 10 hopper cars per hour. Trackage space for 100 car unit trains. Truck Receiving - 12,000 bushels per hour with 62 ft. hydraulic unloader. 70 ft. platform scale. Box Car Receiving - 25,000 bushels per hour with unloader unit. Shipping System - 65,000 bushels per hour with traveling gantry ship- loader. 432 ft. of travel, loading to 105 ft. radius with telescoping boom and spout, luffing and slewing.	One fixed bulk loading tower with ringed cantilevered boom with 31.5 foot (9.6 m) outboard reach and telescopic gravity spout served by 36 inch (91 cm) inclined, electric belt conveyor system extending from 4 under-track pits. Height of boom above MLLW is 50 feet at 18 degrees to bottom of boom at spout, 42 feet at 18 degrees from wharf face, 33 feet at level position from base of concrete. Maximum loading rate 600 tons per hour.	Sevedoring equipment and berthside rail service
	PIER D BERTHS 32, 33	PIER G BERTHS 212-215	BERTH 83	
LENGTH OF BERTHS:	824 ft 251.1 m	2,110 643.1 m	600 ft 182.9 m	
WHARF HEIGHT:	13.9 ft 4.2 m	18.5-18.8 ft 5.6-5.7 m	14.4 ft 4.4 m	
OPEN STORAGE AREA:	157,623 sq. ft. 14643 m ²	120,000 tons 132000 mt		
DESIGN DEPTH OF WATER AT BERTH:	36 ft 11 m	34 ft 10.4 m	38 ft 11.6 m	
OTHER:		Covered Storage 270,000 tons Design Depth of water 9 ft. out 40 ft. 12.2 m		
TERMINAL OPERATOR:	Pacific Coast Cement Corp.	Metropolitan Stevedore Co.	National Gypsum Co.	
CARGOS HANDLED:	Bulk cement	Bulk petroleum coke, coal, potash, iron ore.	Bulk gypsum	
SPECIAL FACILITIES/EQUIPMENT:	Silo capacity = 50,000 tons. Screw- type unloader capacity = 600-800 TPH unloads to conveyor system direct to silos. Highest el. vert screw = 42.5, lowest el. vert screw = 38 ft. Max reach 94 ft. from face of wharf (concrete) 91.5 ft. from PHL.	Additional shiploaded under construction operational in 1982 Stackable area 85,882 sq. ft. (7960 m ²). One electric, traveling, bulk shiploader with retractable, straight-line bridge boom having 58-foot (17.7 m) outboard reach - height of 60 feet (18.3 m) above MLLW. 58 foot outreach beyond pier- head line, 60 feet above MLLW to bottom of shuttle, 47 feet 7 in. to bottom of swivel. Boom equipped with 48-inch (1.22 m) electric belt conveyor and a telescopic loading spout with mechanical trimming head. Loading rate 3,300 long tons of iron ore per hour. Shiploader travels on rails along rear of face for distance of 1,485 feet (453 m). working range is 1,175 feet (358 m). Bulk materials are handled by 48-inch (1.22 m) and 54-inch (1.37 m) electric belt conveyor system extended to shiploader through tunnel reclaim from car unloading sheds and storage areas.	Adjustable, elevated receiving hopper served by an elevated electric belt conveyor system extending to a 40,000 ton capacity storage building. 800-900 ton per hour capacity.	

Source: Port of Long Beach, Harbor Handbook

EXHIBIT 3-25

BERTHING CAPACITY AT THE PORT OF LONG BEACH
CONTAINERIZED CARGOES

	PIER B & C BERTHS B: 12, 13, 17, 18, 19 C: 20-27		PIER G BERTHS 227-228		PIER G BERTHS 229		PIER G BERTHS 230	
LENGTH OF BERTHS:	6,790 ft	2070 m	1,100 ft	335.2 m	750 ft	228.6 m	750 ft	228.6 m
APRON WIDTH:	41-51 ft	12.5-15.5 m						
WHARF AREA:	2181,547 sq. ft	202666 m ²						
WHARF WEIGHT:	116,224 ft	35-6.8 m	15.6 ft	4.8 m	15.5 ft	4.7 m	15.5 ft	4.7 m
AREA OF TRANSIT SHEDS (NET):	368,720 sq. ft	34254 m ²						
LOADING PLATFORM AREA:	70,468 sq. ft	6546 m ²						
OPEN STORAGE AREA:	871,662 sq. ft	80977 m ²	See Other					
DESIGN DEPTH OF WATER AT BERTH:	37-42 ft	11.3-12.9 m	42 ft	12.8 m	42 ft	12.8 m	42 ft	12.8 m
OTHER:	4 RO-RO Ramps 115 acres uncovered marshaling area.		Container Freight station area (Net) 71,150 sq. ft. 6610 m ² Terminal Area, excluding CFS, 1,592,265 sq. ft. 147921 m ²		Terminal Area 1,287,508 sq. ft. 119610 m ²		Excluding CFS 992,097 sq. ft. 92166 m ² Container Freight station area 198,716 sq. ft. 18460 m ² Inside storage 14,000 sq. ft. 1300 m ²	
TERMINAL OPERATOR:	California United Terminals		Sea Land Services, Inc.		Maersk Line		United States Lines	
CARGOS HANDLED:	General cargo in containers roll-on-roll-off cargo and break bulk		General cargo in containers containers on chassis operation		General cargo in containers Chassis operation		General cargo in containers Chassis operation	
SPECIAL FACILITIES/EQUIPMENT:	Stevedoring equipment: four 40-ton traveling container cranes (out reach from fender 107 feet, clear height above water level 106 feet at midw) travel full length of berth transainers, top handlers and side handlers. Container storage space 13,000 TEU. Chassis 1000 - 40 feet chassis. Receptacles for 360 refig- erated units. 7 lane man gate and 6 scales. Rail spurs on Berths B-C		Two 30 long ton traveling container cranes with 100 ft. span and 115 ft. outreach. Space for storing 3670 TEU containers including 242 refig- erated units. Container freight station separate from terminal.		Two traveling 30 long ton container cranes for 100 ft. span and 115 ft. outreach. Storage for 2870 TEU containers including 84 spaces for refrigerated units.		Two 30 long ton traveling container cranes with 100 ft. span and 115 ft. outreach. Space for storing 1784 TEU containers including 50 spaces for refrigerated units.	
	PIER J BERTHS 232, 233, 234		PIER J BERTHS 243, 244		PIER J BERTHS 245, 246, 247			
LENGTH OF BERTHS:	2,300 ft	701 m	1,200 ft	365.8 m	2,100 ft	640.1 m		
APRON WIDTH:	75 ft	22.9 m	90 ft	27.5 m	100 ft	30.1 m		
WHARF AREA:	172,500 sq. ft	16025 m ²	130,680 sq. ft	12140 m ²	1,422,966 sq. ft.	132194 m ²		
WHARF HEIGHT:	16.0 ft	4.9 m	15.9 ft	4.8 m	15.9 ft	4.8 m		
OPEN STORAGE AREA:	2,980,460 sq. ft	276885 m ²	3,310,580 sq. ft	307551 m ²	See C.F.S. below			
DESIGN DEPTH OF WATER AT BERTH:	36-42 ft	11-12.8 m	42 ft	12.8 m	36 ft	11 m		
OTHER:	Terminal Area Empty Storage: 752,201 sq. ft. 69879 m ² Container Freight (CFS): 60,100 sq. ft. 5583 m ²		Long Beach Container Terminal, Inc.		Terminal Area excluding CFS: 1,612,759 sq. ft. 149825 m ² Container Freight Station Area (Net): 88,600 sq. ft. 8231 m ²			
TERMINAL OPERATOR:	International Transportation Services, Inc.				Pacific Container Terminal			
CARGOS HANDLED:	General cargo in containers. Ground and chassis operation		General cargo in containers Ground and chassis operation		General cargo in containers; Chassis and ground operation.			
SPECIAL FACILITIES/EQUIPMENT:	Four 30 long ton traveling container cranes with 50 ft. span and 114 ft. outreach. Four 40 L tons and four 30 L tons capacity transainers. Space for storing 6,000 TEU con- tainers on ground and 2500 Chassis Space and 264 spaces for refrigerated units		Two traveling 40 ton container cranes space for storing 3800 TEU containers with provision to work three 40 ton Pacoca cranes and complete repair facilities including refig. container pre-imp facility. Two 40 ton transainers		Three traveling container cranes 50 ton capacity and three 40 ton transainers. Space for storing 8000 TEU containers and 72 spaces for refrigerated units.			

Source: Port of Long Beach, Harbor Handbook

PORT OF OAKLAND

Location and General Description

The Port of Oakland is located on the eastern mainland shore of San Francisco Bay opposite the City of San Francisco. It is the largest and busiest deep water container port on the U.S. Pacific Coast, the second largest in the United States and in terms of tonnage, storage space and numbers of berths and cranes, it is among the world's ten largest container ports.

The Port of Oakland has jurisdiction over 26 miles of shoreline but only one-half of this is owned by the port as shown in Exhibit 3-27. The utilization of Oakland's shoreline by various public and private enterprises is shown in Exhibit 3-28.

Commerce

During 1981, total foreign and domestic trade through the Port of Oakland totaled 10,715,991 revenue tons and container cargo accounted for around 85%. The major foreign import commodities were vegetables and fruit, nonmetal mineral manufactures, beverages and metal manufactured goods, and the major export commodities were vegetables and fruit, textile fibers and waste, metal ore and scrap, and pulp and waste. 1981 imports and exports through the Port of Oakland are summarized in Exhibit 3-29 and a breakdown of vessel arrivals/departures by vessel type is provided in Exhibit 3-30. Foreign trade accounted for three-quarters of the cargo passing through the port during 1981 and of this, 60% involved transpacific shipping. Exhibit 3-31 summarizes Oakland's trade with the rest of the world.

Port Administration

The Port of Oakland is a department of the City of Oakland and is administered by a seven-member Board of Port Commissioners. Commissioners are nominated by the mayor and must be approved by the City Council. The Port operates Oakland International Airport and manages the Oakland Coliseum/Arena as well as many other commercial and industrial properties.

The Port is entirely self-supporting and makes capital improvements from its own income and from the sale of revenue bonds. Net income to the Port increased about 6% between 1981 and 1982. Marine terminal operations generated 58% of total operating revenues and airport management accounted for an additional 32%. Exhibit 3-32 is a summary of revenue sources for the Port of Oakland based on FY 1982.

The Port of Oakland and all other Bay area ports are subject to management by the San Francisco Bay Conservation and Development Commission (BCDC). The BCDC is a 27-member commission created in 1965 by the California legislature to protect San Francisco Bay and it has permit authority over land use changes and filling and dredging in the Bay.

Port Facilities

All of the terminal facilities in the Port of Oakland are port-owned and they are operated by private steamship or terminal companies under lease or tariff agreements. Oakland's waterfront has 475 acres of container and 60 acres of general cargo facilities and includes 21 container cranes and 28 deep-water berths. The Port's latest maritime project is the Howard

Container Terminal, a multi-purpose facility that can handle containerships, combination vessels, ro/ro and conventional vessels. The new terminal covers 49 acres and has two 100-foot gage container cranes, three berths with an overall length of 2278 feet and two transit sheds (one 56,000 square ft. and another 60,000 square ft.). A railway runs directly from the terminal wharf to the three transcontinental railroads serving the port. Interstate highway systems are located near the new terminal which is also situated close to extensive refrigerated cargo storage facilities. Exhibit 3-33 summarizes the marine facilities available at the Port of Oakland.

Major Planning

To ensure that the Port will continue to attract transpacific container cargo traffic, the Port has developed the 40-acre Charles P. Howard Container Terminal as part of a \$92 million expansion program which is scheduled for completion at the end of 1983. There are also plans for the construction of a new airport terminal to provide 96,000 square feet of additional terminal space and seven additional aircraft gates.

REFERENCES

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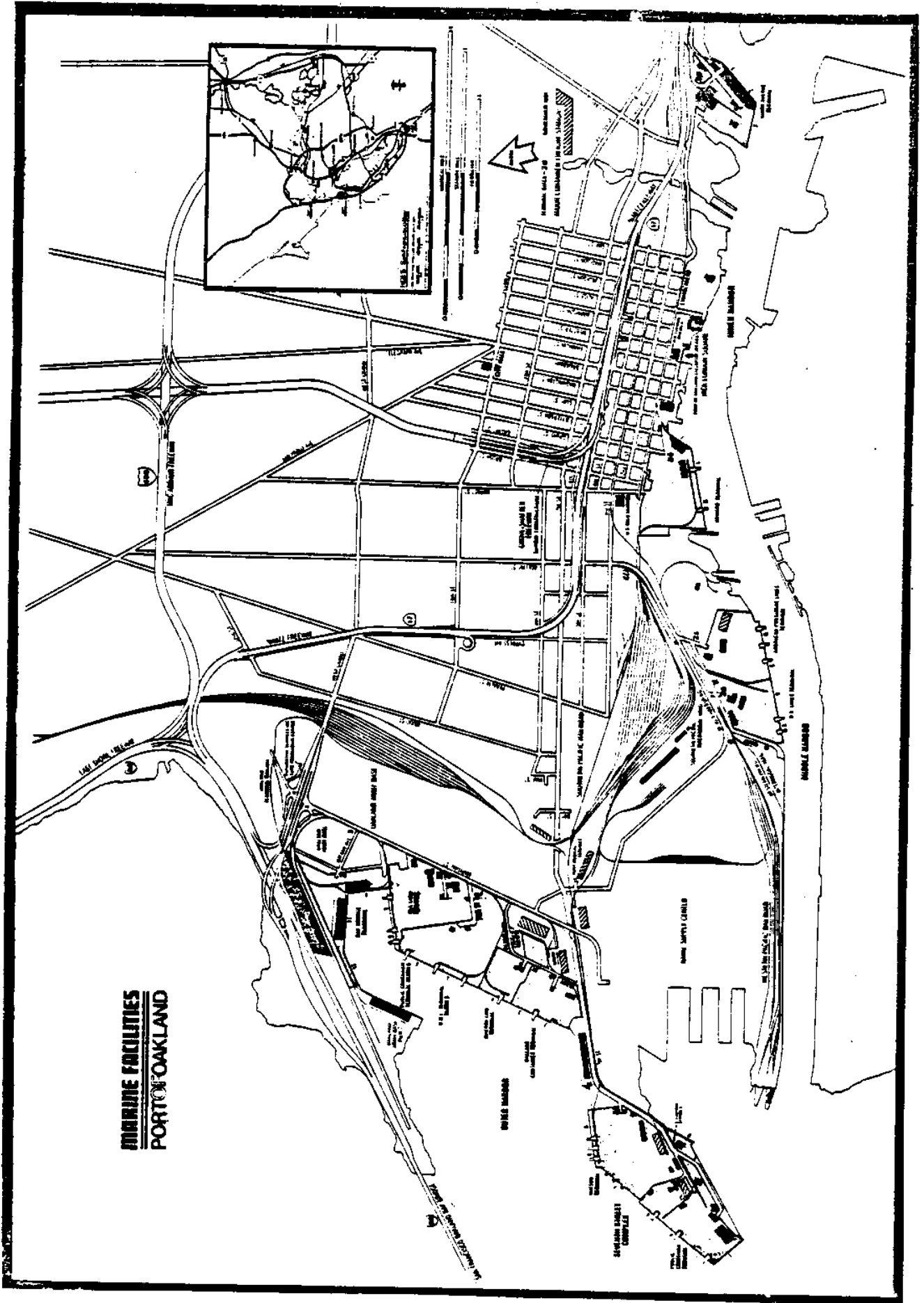
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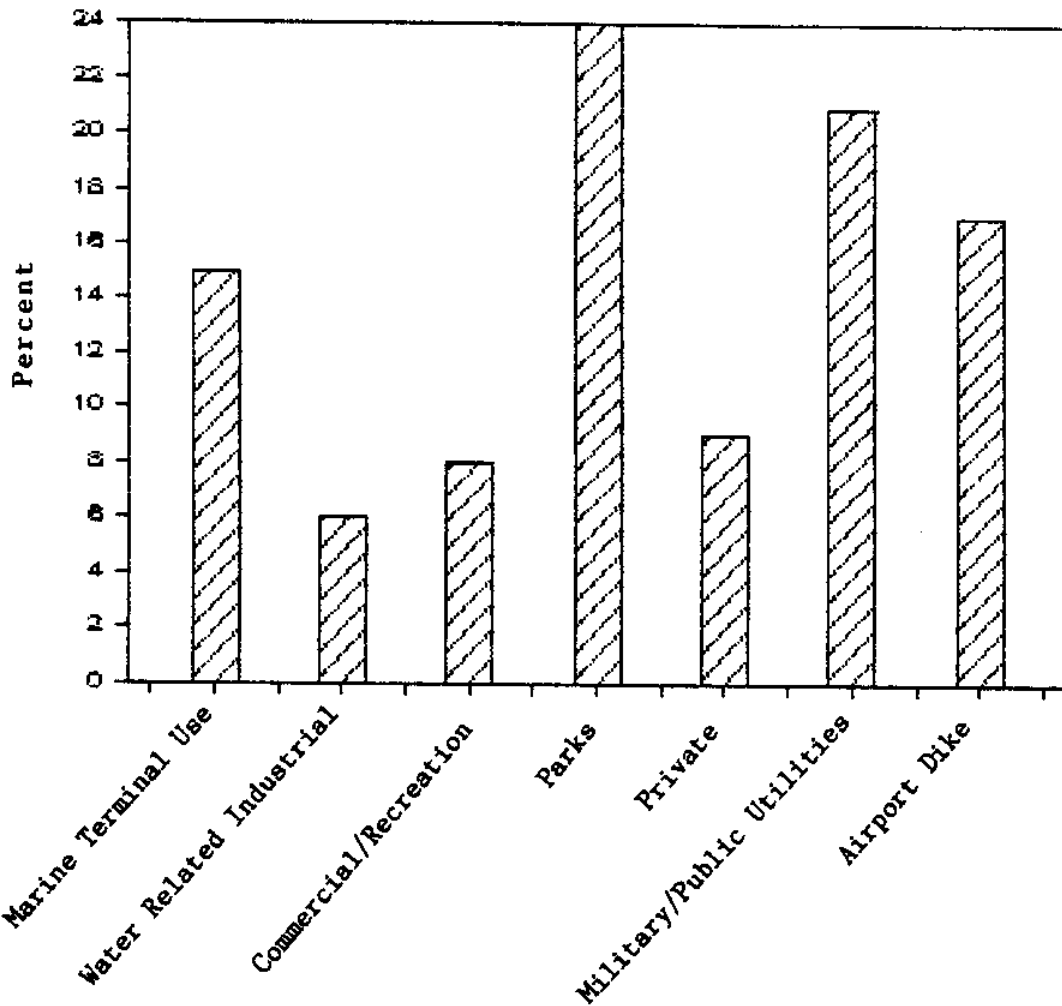
**MARINE FACILITIES
PORT OF OAKLAND**

EXHIBIT 3-27
OWNERSHIP OF OAKLAND SHORELINE

<u>Ownership</u>	<u>Miles</u>	<u>Percent of Total</u>
Privately Owned	2.3	9 %
Military/Public Utilities	5.5	21
Airport Dike	4.4	17
Total	----- 12.2 -----	----- 47 % -----
Port-Owned	13.8	53 %
Total Oakland Shoreline	----- 26.0 -----	----- 100 % -----

Source: Port of Oakland, Public Access Plan (Oakland: Port of Oakland, 1979), p. 22.

UTILIZATION OF OAKLAND SHORELINE



	<u>Miles</u>	<u>Percent of Total</u>
Marine Terminal Use	4.0	15 %
Water Related Industrial Use	1.6	6
Commercial/Recreation	2.0	8
Parks	6.2	24
Private	2.3	9
Military/Public Utilities	5.5	21
Airport Dike	4.4	17
Total Oakland Shoreline	26.0	100 %

Source: Port of Oakland, Public Access Plan (Oakland: Port of Oakland, 1979), p. 22.

EXHIBIT 3-29

MAJOR IMPORTS AND EXPORTS
AT THE PORT OF OAKLAND - 1981
(metric tons)

MAJOR EXPORTS

Commodity	Tonnage (000)
Vegetables and fruit	119
Nonmetal mineral manufactures	87
Beverages	84
Metal manufactures	79
Coffee, tea and spices	56
Clothing and accessories	51
Industrial machinery	37
Road vehicles	36
Electric appliances	29
Footwear	25
Telecommunications/hifi equip.	24
Cork/wood manufactures	23
Pulp/waste paper	22
Rubber manufactures	20
Fertilizer	18
Paper/paperboard	15
Textile yarn/fabric	15
Fish and fish products	14
Photo and timepiece	13
Power generators	11
Meat and meat products	11
Organic chemicals	11
Total	800

MAJOR IMPORTS

Commodity	Tonnage (000)
Vegetables and fruit	385
Textile fiber/waste	321
Metal ore/scrap	281
Pulp and waste paper	177
Plastic resin/material	140
Animal feed	118
Industrial machinery	85
Paper/paperboard	83
Crude materials	81
Cereals and preparations	74
Meat and meat products	65
Raw hides/skins	64
Cork and wood	57
Miscellaneous	56
Beverages	52
Chemical products	51
Inorganic chemicals	50
Misc. edible products	46
Fixed vegs. and oils	40
Petroleum and products	39
Sugar and honey	28
Road vehicles	26
Nonmetal mineral manufactures	23
Metal manufactures	20
Total	2362

EXHIBIT 3-30

VESSEL ARRIVALS AT THE PORT OF OAKLAND - 1981

<u>Type</u>	<u>Arrivals</u>	<u>Percent of Total</u>
Ocean Vessels	1,284	29 %
Cargo Barges	282	6
Other Craft	2,850	65
	<hr/>	<hr/>
Total	4,416	100 %

Source: Port of Oakland, Statistical Report for Calendar Year 1981 (Oakland: Board of Port Commissioners, 1983).

REVENUE TONNAGE BY WORLD REGION
AT THE PORT OF OAKLAND - 1981
(Metric Revenue Tons)

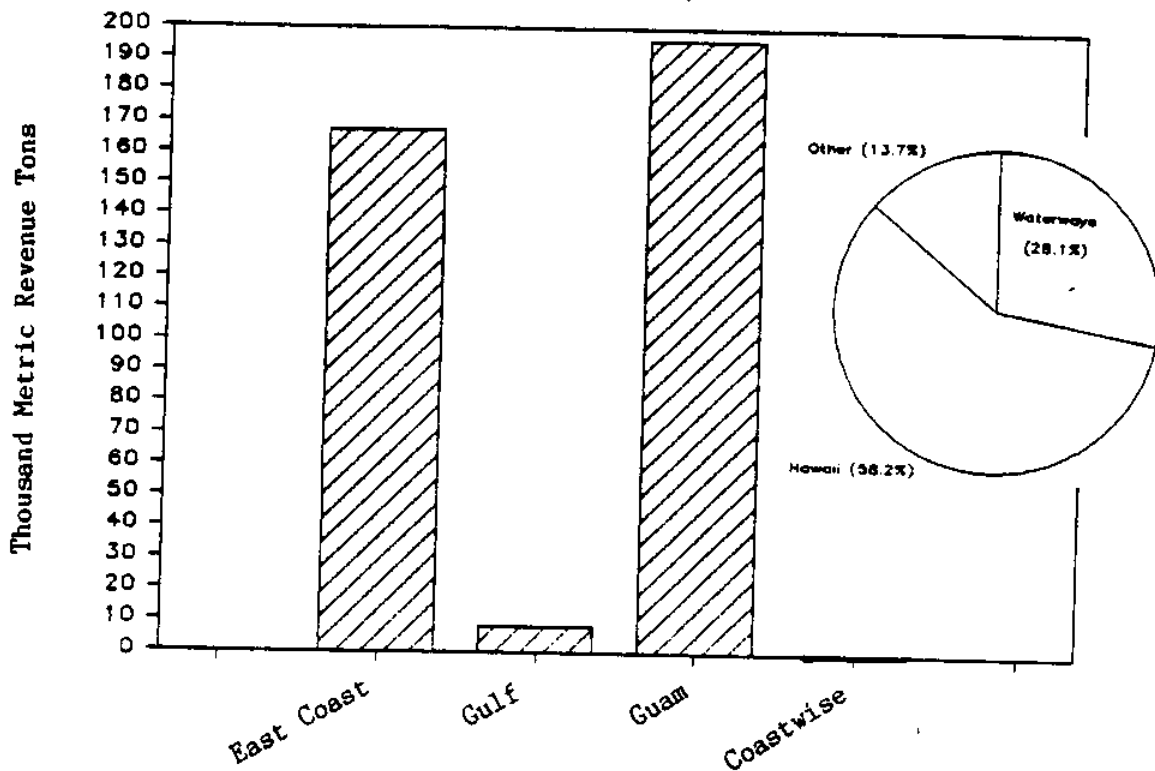
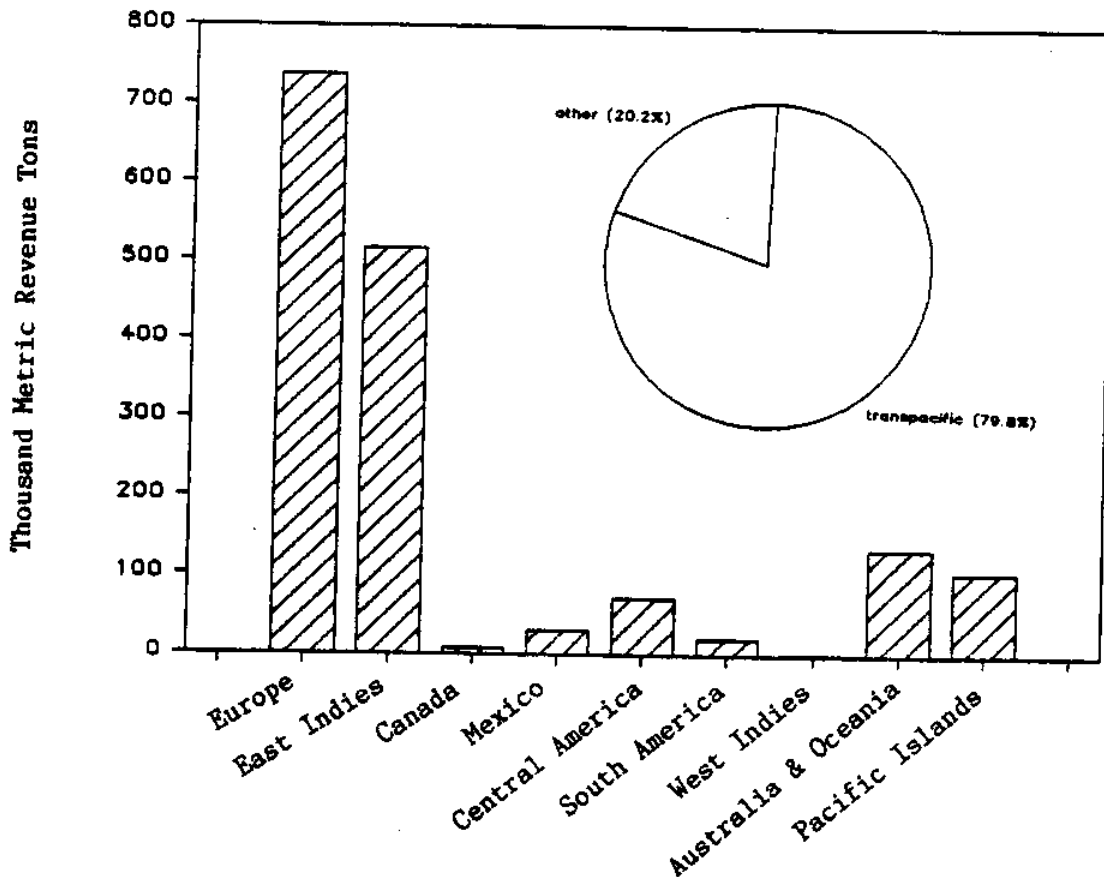


EXHIBIT 3-31B

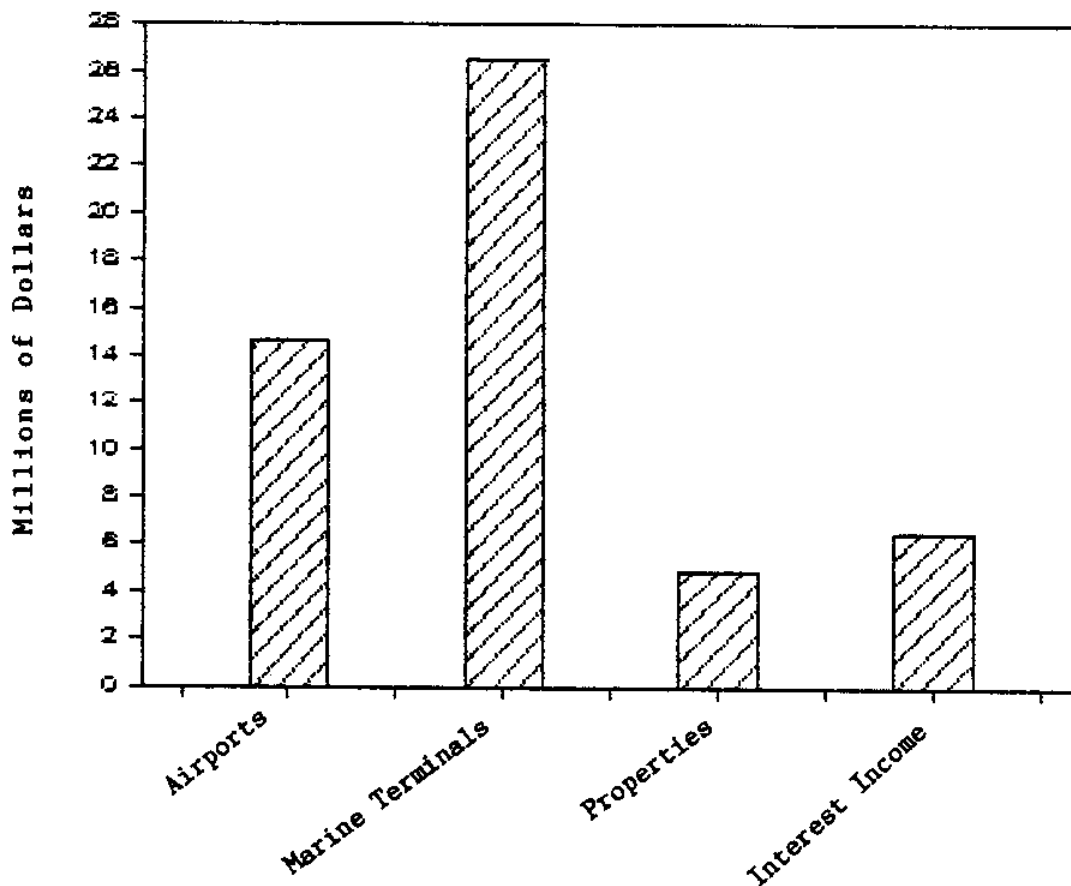
REVENUE TONNAGE BY WORLD REGION
 AT THE PORT OF OAKLAND - 1981
 (Metric Revenue Tons)

Region	Inbound Cargo (MRT)	Outbound Cargo (MRT)	Total Cargo (MRT)	Percent of Total (%)
Foreign				
European	374,309	362,521	736,830	6.87%
Transpacific	2,798,347	3,597,814	6,396,161	59.69
East Indies	135,049	380,476	515,525	4.81
Canada	7,264	—	7,264	.07
Mexico	22,233	7,256	29,489	.27
Central America	22,141	48,309	70,450	.66
South America	18,986	989	19,975	.18
West Indies	—	537	537	.01
Australia - Oceania	30,604	102,244	132,848	1.24
Pacific Isles - Trust Terr.	4,884	99,871	104,755	.98
Total Foreign	3,413,817	4,600,017	8,013,834	74.78%
Domestic				
Hawaii	329,864	1,241,953	1,571,817	14.67%
East Coast	68,410	98,422	166,832	1.56
Gulf	1,695	6,400	8,095	.07
Guam	15,472	180,646	196,118	1.83
Coastwise	—	138	138	.01
Inland Waterways	310,199	448,958	759,157	7.08
Total Domestic	725,640	1,976,517	2,702,157	25.22%
TOTAL	4,139,457	6,576,534	10,715,991	100.00%

Source: Port of Oakland, Statistical Report.

EXHIBIT 3-32

REVENUE SOURCES FOR THE PORT OF OAKLAND - 1982



<u>Source</u>	<u>Revenue</u>
Airports	\$14,658,940
Marine Terminals	28,473,296
Properties	4,853,864
Interest Income	6,529,642
Total	<u>\$52,515,742</u>

Source: Port of Oakland, Report on Examination of Financial Statements: Year Ended June 30, 1982, Oakland 1982 (prepared by Touche Ross & Co.), p. 3.

EXHIBIT 3-33

OAKLAND PORT FACILITIES

Terminal	Berths			Storage	
	Total Number	Total Length (meters)	Depths at MLLW (meters)	Open (sq. m.)	Covered (sq. m.)
Outer Harbor Area					
Oakland Container	2	309	11.3	64,333	—
Maersk Line	1	274	12.8	55,254	—
Neptune Orient Lines/ Outer Harbor Public Container	2	560	12.8	183,484	—
Sea-Land Service	2	413	N.A.	202,148	7,078
Bay Bridge	3	926	10.7	127,858	19,461
Seventh Street Area					
Matson	3	676	10.7	232,250	3,699
7th Street Public Container	5	1,141	10.7-12.2	169,466	5,707
Middle Harbor Area					
United States Lines	2	440	10.7	95,613	—
American President Lines	2	396	11.3	143,274	5,573
Inner Harbor Area					
Howard	3	694	11.3-12.8	198,289	10,776
Ninth Avenue	3	638	10.7	52,039	23,239
Total	28	6,467		1,524,008	75,533

Source: Port of Oakland, Marine Terminals Department, Directory of Terminal Specifications (Oakland: Port of Oakland, 1982), pp.3-57.

PORT OF RICHMOND

Location and General Description

The Port of Richmond is situated on the eastern shore of San Francisco Bay approximately ten miles north of Oakland. The Port developed where deep water runs closest to shore on the east side of the Bay.

Richmond was a major shipbuilding center during World War II, but until 1968, the City of Richmond had not acquired port facilities. At that time, the old wartime shipbuilding terminals were acquired by Richmond from the U.S. government. Four other terminals were purchased by the port from private parties during 1973, but most of the land and facilities at the Port of Richmond is still privately owned and city-owned facilities handle less than 7% of cargo tonnage passing through the port.

The ownership of the tidelands is divided among many public and private organizations including the City of Richmond, the Regents of the University of California, Tyme Oil Co., Western Tug and Barge Corp., Texaco Inc., Cal-Coast Marine, Inc., Richmond Boat Works, Inc., ATSF Railway Co., Union Oil Co. of California, ARCO Petroleum Products Co. and Standard Oil Co. of California. Most of the land at the Port of Richmond is utilized for maritime trade and industrial activities associated with petroleum products; the rest is used for commercial and recreational activities and Navy installations.

Commerce

In 1982, 14,967,658 metric tons of cargo moved through city-owned and privately-owned facilities at the Port of Richmond. The major commodities handled at city-owned terminals, which accounted for 1,000,000 metric tons, were petroleum products, molasses, and fats and oils. Privately-owned terminals handled mostly petroleum products, sugar, gypsum rock, heavy materials and containers. Exhibit 3-35 and Exhibit 3-36 provide a breakdown of 1981 tonnage throughput for city-owned and privately-owned terminals at the Port of Richmond.

During 1982, 881 ships and 1072 barges called at the Port of Richmond and about 89% of them contained bulk liquid. Vessel arrivals at privately-owned terminals accounted for approximately 82% of port calls as shown in Exhibit 3-37.

Port Administration

The port is owned in part by the City of Richmond, but most of the land and facilities are in private hands and most of the city-owned port facilities are leased to private corporations. The city-owned Port of Richmond is a department of the City of Richmond and is administered by the City Manager and nine City Councilmen. A seven-member Port Commission serves the Council in an advisory capacity and Commissioners are appointed by the mayor for two and four year terms. A summary of port revenues for the publicly owned Port of Richmond during 1982 is provided in Exhibit 3-38.

Port Facilities

The Port of Richmond has seven terminals. Three are used for bulk liquids, one as a container terminal, and one as a mooring for shipbreaking and shipment of scrap metal. Another is a shipyard facility and one is used almost exclusively for the import and export of automobiles. There is additional open storage and also capacity for 32,881,800 gallons of liquid storage and two container freight stations that serve over 30 steamship lines.

The first phase of a new Matson container handling system was completed in June of 1979. The remodeled terminal is serviced by two 37-ton vessel gantry cranes, two yard overhead gantry cranes, and two mobile yard cranes. The system is designed to speed container handling and reduce damage by moving cargo containers above the ground. Plans call for further expansion of this facility to give it the greatest heavy-lift capacity of any U.S. container terminal. The Port of Richmond is linked with transportation systems through Interstate 80 and railway connections with ATSF, Southern Pacific, and Western Pacific. A summary of city-owned port facilities at the port is provided in Exhibit 3-39.

Major Planning

The Master Plan for the port calls for four new ship berths including two 320 meter long container berths, ro/ro berth with lift-on and lift-off capacity, and one general purpose berth. 45 acres of land adjacent to the wharf have been designated as container and ro-ro storage area. New entrance facilities are

planned and an area has been designated for a port-owned railroad and a container freight station.

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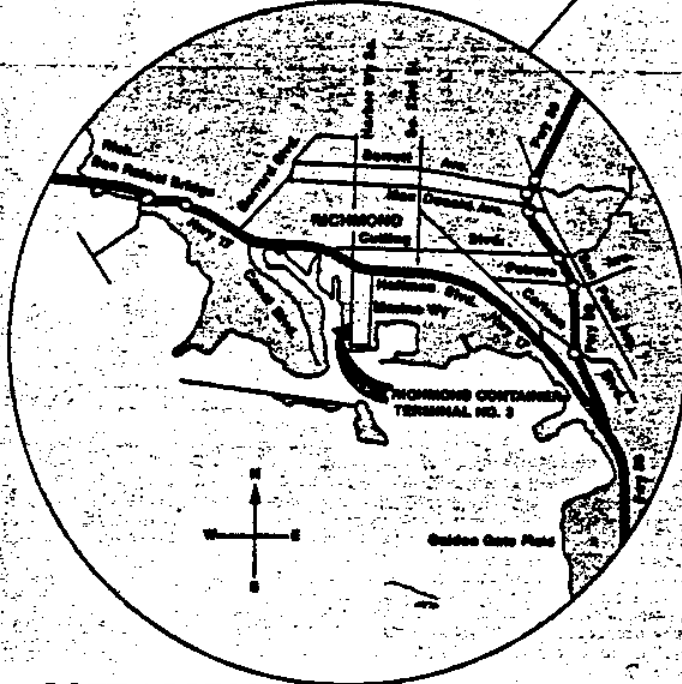
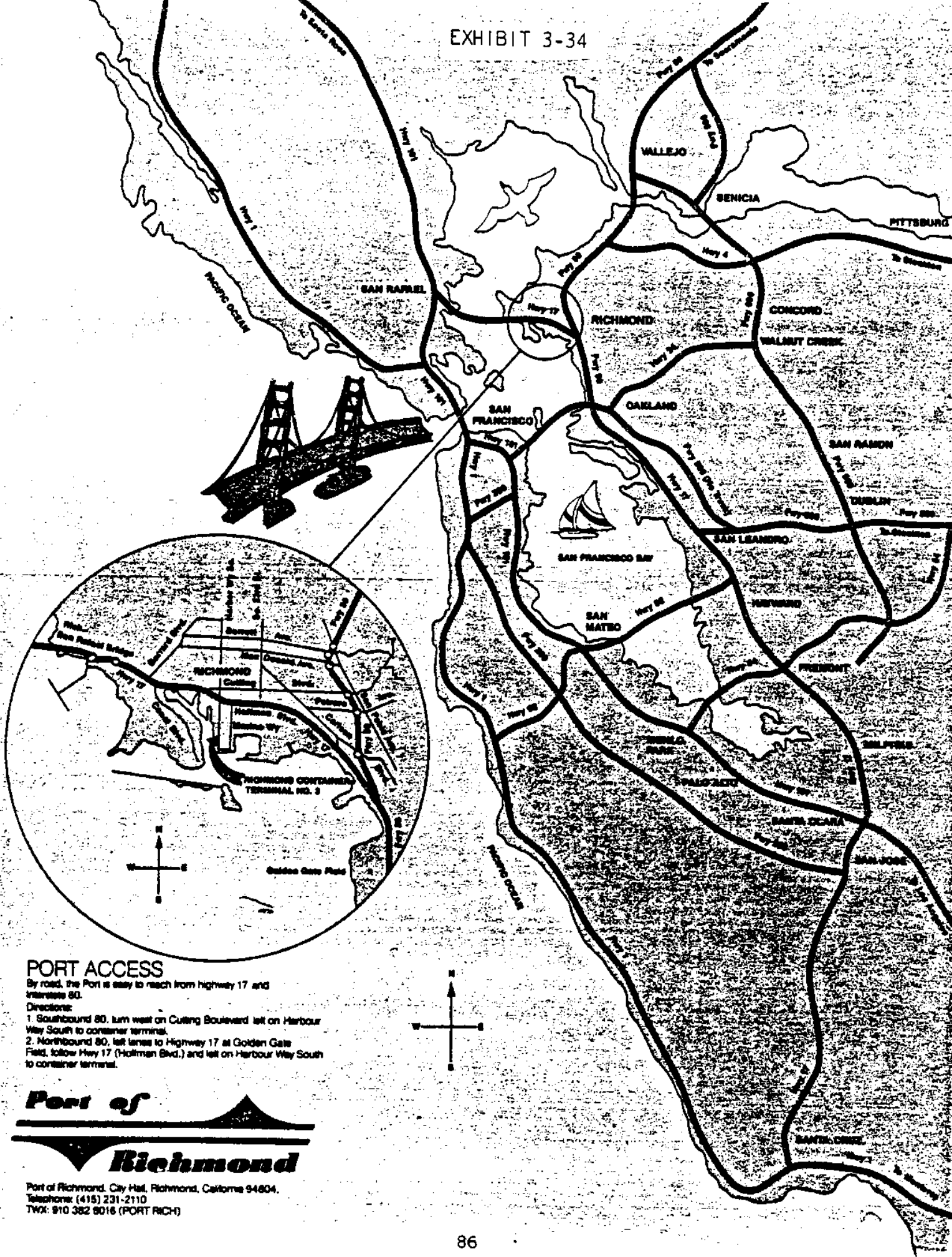
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PORT ACCESS

By road, the Port is easy to reach from highway 17 and Interstate 80.

Directions:

1. Southbound 80, turn west on Cutting Boulevard left on Harbour Way South to container terminal.
2. Northbound 80, left lanes to Highway 17 at Golden Gate Field, follow Hwy 17 (Hollman Blvd.) and left on Harbour Way South to container terminal.



Port of Richmond, City Hall, Richmond, California 94804.
 Telephone: (415) 231-2110
 TWX: 910 382 9016 (PORT RICH)

EXHIBIT 3-35

CARGO HANDLED BY CITY-OWNED TERMINALS
AT THE PORT OF RICHMOND - 1982
(metric tons)

<u>Commodity</u>	<u>Tonnage</u>
Bulk Liquid	416,826
Scrap Metal	242,978
Automobiles	46,650
Containers	
Import	110,916
Export	183,877
Total	<hr/> 1,000,877

EXHIBIT 3-36

CARGO HANDLED BY PRIVATELY-OWNED TERMINALS
 AT THE PORT OF RICHMOND - 1982
 (metric tons)

<u>Commodity</u>	<u>Tonnage</u>
Bulk Liquid	13,514,652
Sugar	192,148
Gypsum	100,912
Bulk Dry	149,977
Containers	
Import	1,176
Export	7,916
	<hr/>
Total	13,966,781

EXHIBIT 3-37

VESSEL ARRIVALS AT CITY-OWNED TERMINALS
AT THE PORT OF RICHMOND - 1982

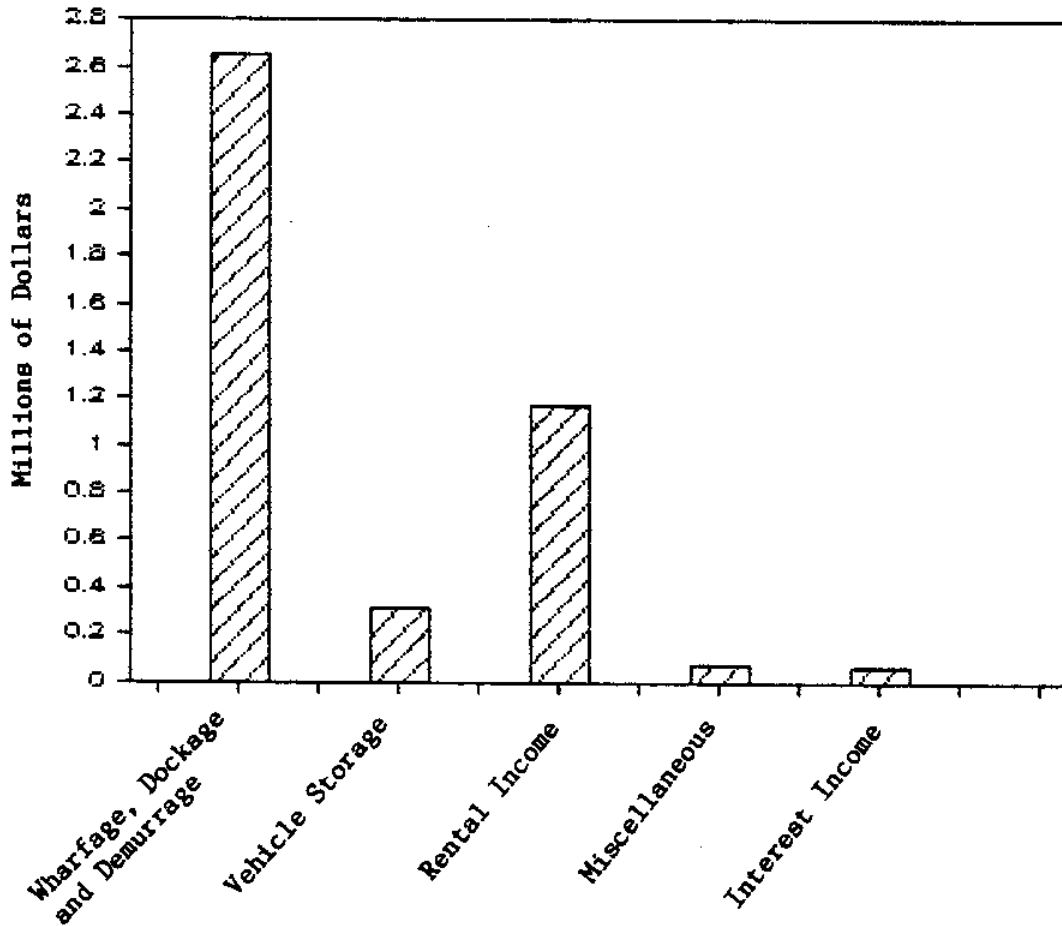
<u>Type</u>	<u>Ships</u>	<u>Barges</u>
Bulk Liquid	150	34
Scrap Metal	11	--
Automobiles	68	--
Containers	83	--
Total	<hr/> 312	<hr/> 34

VESSEL ARRIVALS AT PRIVATELY-OWNED TERMINALS
AT THE PORT OF RICHMOND - 1982

<u>Type</u>	<u>Ships</u>	<u>Barges</u>
Bulk Liquid	532	1022
Sugar	1	--
Gypsum Rock	9	--
Bulk Dry	27	13
Containers	--	3
Total	<hr/> 569	<hr/> 1038

EXHIBIT 3-38

REVENUE SOURCES FOR THE PORT OF RICHMOND - 1982



<u>Source</u>	<u>Revenue</u>
Wharfage, Dockage & Demurrage	\$2,657,256
Vehicle Storage	316,534
Rental Income	1,176,044
Miscellaneous	70,609
Interest Income	60,929
Total	\$4,281,372

EXHIBIT 3-39
RICHMOND PORT FACILITIES

<u>Terminal</u>	<u>Berths</u>		<u>Transit Sheds</u>	
	Berthing Space (meters)	Depths at MLLW (meters)	Number	Area (sq. m.)
Terminal No. 1	198	11.0	1	3166
Terminal No. 2	366	10.7	-	--
Container Terminal No. 3	307	10.7	-	--
Terminal No. 4	319	9.7	1	1050
Levin Metals	629	6.7-11.3	-	--
Terminal No. 6	284	10.7	-	--
Terminal No. 7	213	10.7	-	--

Sources: U.S. Army Corps of Engineers, Oakland-Alameda, Richmond, and Ports on Carquinez Strait, CA, Port Series Report No. 31 (Fort Belvoir, VA: U.S. Army Corps of Engineers, 1982), pp. 76-100; and Port of Richmond, Marine Terminal Facilities (Richmond: Port of Richmond, n.d.).

PORT OF SAN FRANCISCO

Location and General Description

The Port of San Francisco is located on the eastern side of the peninsula that forms San Francisco Bay and most of the property within the jurisdiction of the Port of San Francisco is city-owned. The City of San Francisco acquired the port from the State of California in 1969 and has made it profitable by taking advantage of the commercial and tourist appeal of Pier 39, Fishermen's Wharf, cruise ship facilities and the Waterfront Promenade.

The Northern San Francisco waterfront contains the tourist oriented facilities like Fishermen's Wharf and the major maritime operations are located on the Southern waterfront. These include ship repair yards and facilities for handling containers, ro/ro, grain, liquid bulk, breakbulk and automobiles.

Commerce

The Port of San Francisco handled 2,194,000 metric revenue tons of cargo during 1982 of which 75% was general cargo. Over one-half of this general cargo was containerized, but the Port of San Francisco handles most of the breakbulk cargo passing through the Bay Area.

Major imported commodities are paper and paperboard, coffee, tea and spices, metal manufactures, crude minerals, and meat. The leading exported goods are cereals and preparations, vegetables and fruit, industrial machinery, and petroleum products. Exhibit 3-41 shows the major imports and exports

passing through the Port of San Francisco during 1981 and vessel arrivals/departures by vessel during 1982 are shown in Exhibit 3-42. There was a 24% decrease in arrivals/departures between 1981 and 1982; traffic declined in all categories of vessels except passenger ships which showed a 44% increase.

A breakdown of foreign cargo handled at the Port of San Francisco during 1982 is provided in Exhibit 3-43.

Port Administration

The Port of San Francisco operated as an agency of the State of California until 1969 when administrative control was transferred with the sale of the Port to the City of San Francisco. The Port of San Francisco is the newest Department of the City and is managed by a five-member Port Commission. Commissioners are appointed to four year terms by the mayor of San Francisco. Final acceptance of recommendations by the Commission may require the approval of several other agencies, such as the Bay Conservation and Development Commission or U.S. Army Corps of Engineers.

Revenues for the Port of San Francisco during 1982 were \$24,113,090. The port functions primarily as a landlord and about 56% of the port's revenues come from property rentals. Property rentals are divided between "minimum" rentals which are rental payments subject to a minimum amount, and "percentage" rentals, which are based on a percentage of the tenant's gross sales. Exhibit 3-44 provides a summary of revenues for the Port of San Francisco during 1982.

Port Facilities

The Port of San Francisco employs a variety of facilities to handle the 2 million metric tons of cargo and 50,000 cruise ship passengers each year and these facilities are summarized in Exhibit 3-45. Inland transportation is provided by three trans-continental railroads and nearby Interstate 101, Interstate 280 and Interstate 80 (the San Francisco-Oakland Bridge).

Major Planning

The Port of San Francisco has many projects under construction and in planning. The Container Terminal at Piers 88-96 is to be expanded at an estimated cost of \$54 million to double its current capacity and offer 11 new or improved container berths.

The Pier 80 Army Street Terminal is undergoing \$10 million worth of improvements including conversion to container handling and Pier 3 is being developed at a cost of \$2.5 million to serve several historical ferryboats. The Ferry Building is also being restored and adapted for commercial, cultural, recreational and world trade activities and the Fisherman's Wharf Action Plan is being implemented to add and improve facilities in the Fisherman's Wharf area. The plan includes extension of the Hyde Street Pier to serve as a breakwater and provide space for commercial fisheries. Pier 45 is also being developed for mixed use, including a 350 condominium housing unit and possibly a 250-room hotel. In the Mission Bay area where Southern Pacific Railroad is located, a \$4 billion redevelopment plan has been drawn up which includes 194 acres of parks, waterways, public

plazas, offices, hotels and 7000 housing units.

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THE PORT OF
SAN FRANCISCO

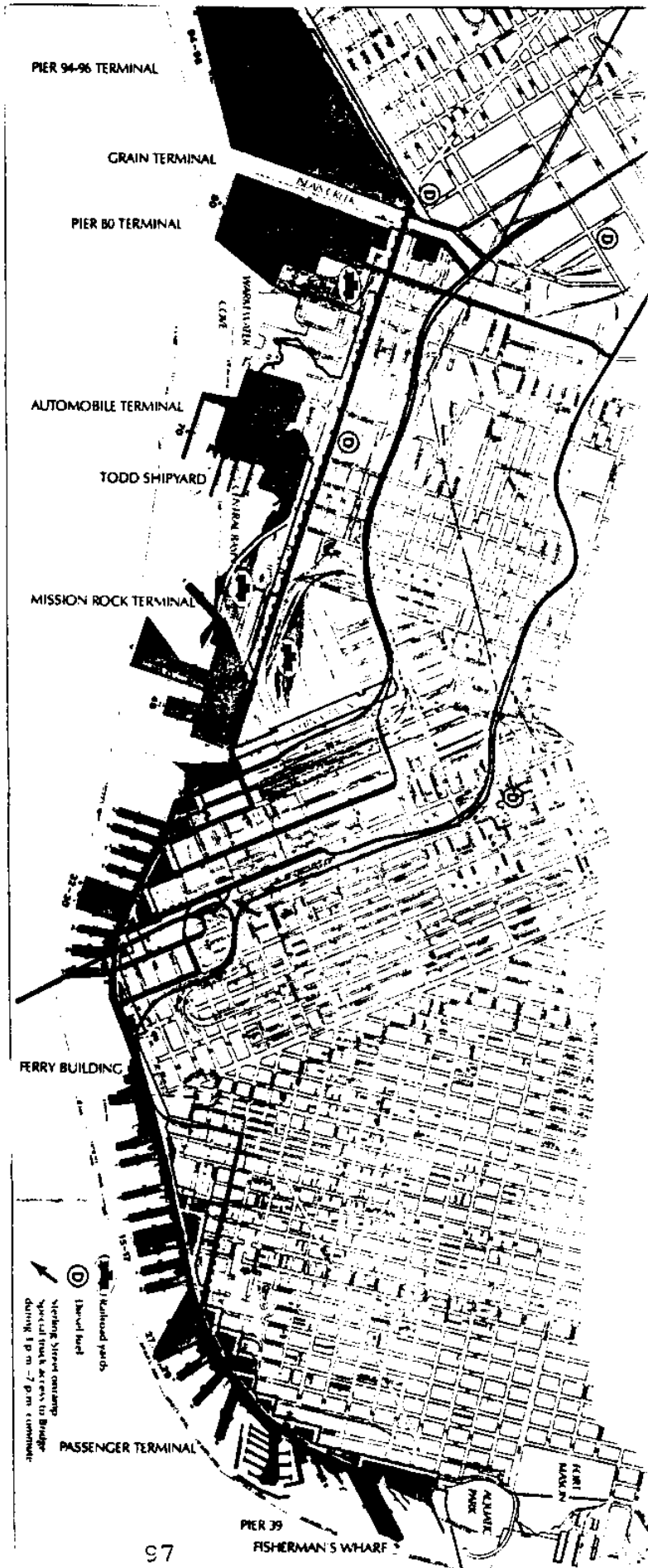


EXHIBIT 3-41

MAJOR IMPORTS AND EXPORTS THROUGH
THE PORT OF SAN FRANCISCO - 1981
(metric tons)

MAJOR IMPORTS

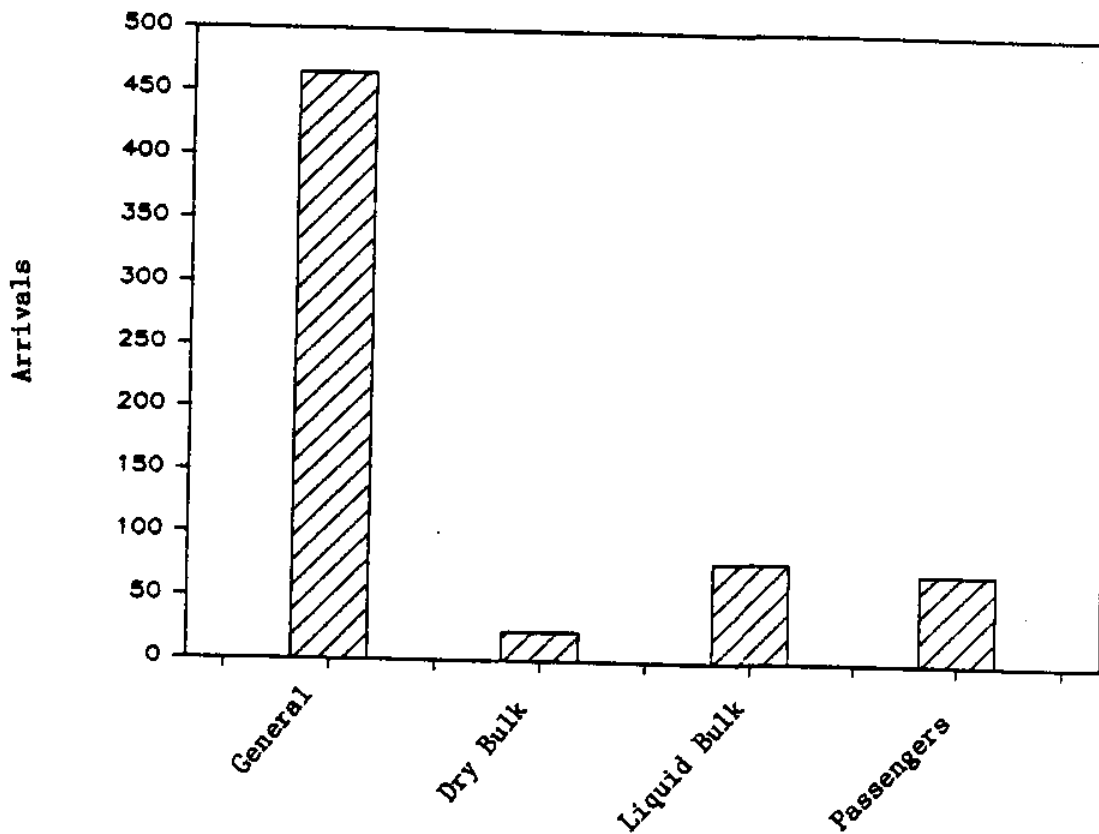
Commodity	Tonnage (000)
Paper/paperboard	202
Coffee, tea and spices	87
Metal manufactures	30
Crude minerals	28
Meat and meat products	25
Road vehicles	18
Metal ore/scrap	12
Vegetables and fruit	11
Cork and wood	10
Textile yarn/fabrics	9
Sugar and honey	8
Miscellaneous	6
Total	446

MAJOR EXPORTS

Commodity	Tonnage (000)
Cereals and preparations	235
Industrial machinery	57
Vegetables and fruit	45
Petroleum products	30
Plastic resin/material	24
Metal ore/scrap	23
Crude minerals	20
Organic chemicals	19
Inorganic chemicals	19
Road vehicles	15
Animal feed	13
Cork and wood	12
Paper/paperboard	12
Iron/steel	12
Dairy/egg products	11
Leather products	10
Total	557

EXHIBIT 3-42

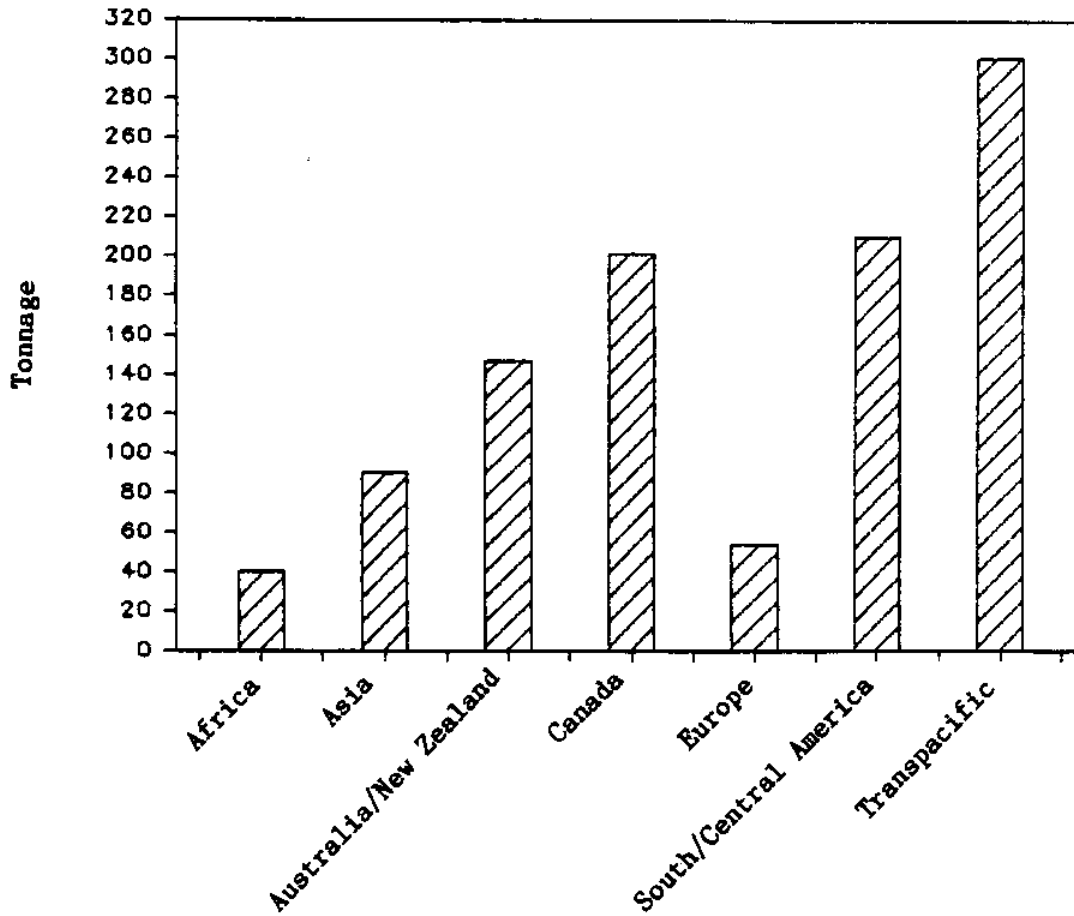
VESSEL ARRIVALS AT THE PORT OF SAN FRANCISCO - 1982



<u>Type</u>	<u>Arrivals</u>	<u>Percent of Total</u>
General	465	73 %
Dry Bulk	23	4
Liquid Bulk	79	12
All Cargo	567	89 %
Passengers	72	11
Total	639	100 %

EXHIBIT 3-43

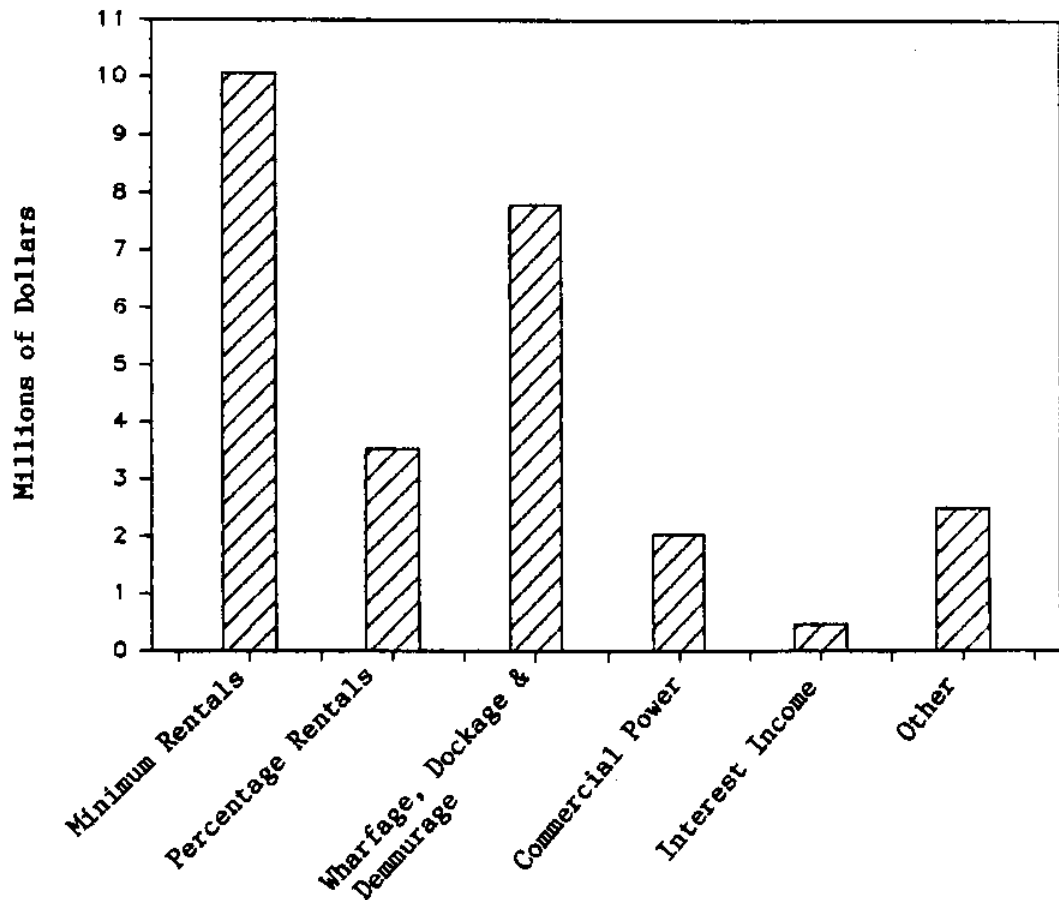
FOREIGN CARGO BY WORLD REGION AT
THE PORT OF SAN FRANCISCO - 1982



<u>Region</u>	<u>Metric Weight Tonnage (000)</u>	<u>Percent of Total</u>
Africa	40	4 %
Asia	27	3
Australia/New Zealand	147	14
Canada	201	19
Europe	54	5
South/Central America	210	20
Southeast Asia	63	6
Transpacific	301	29
Total	1043	100 %

EXHIBIT 3-44

REVENUE SOURCES FOR THE PORT OF SAN FRANCISCO - 1982



<u>Source</u>	<u>Revenues</u>
Minimum Rentals	\$10,062,980
Percentage Rentals	3,513,998
Subtotal Property Rentals	\$13,576,978
Wharfage, Dockage & Demurrage	7,804,379
Commercial Power	2,034,552
Interest Income	448,324
Other	2,488,557
Total	\$24,113,090

Sources: Port of San Francisco, 1982 Annual Report, San Francisco 1982 (prepared by Deloitte Haskins & Sells), pp. 7, 11.

EXHIBIT 3-45
SAN FRANCISCO PORT FACILITIES

<u>Type of Facility</u>	<u>Number of Facilities</u>
Container berths	10
Container gantry cranes	7
Breakbulk berths	37
Liquid bulk terminals	2
Newsprint terminals	2
Cruise ship terminals	2
Ship repair facilities	6
Motor vehicle processing center	1
Two million bushel capacity grain elevator	1
Foreign trade zone	1

<u>Type of Area</u>	<u>Acreage</u>
Uncovered handling area	139
Transit shed space	76

Source: Port of San Francisco, Welcome to the Port of San Francisco (San Francisco: Port of San Francisco, n.d.)

CHAPTER IV
THE ECONOMIC IMPACTS OF
CALIFORNIA SEAPORTS

SOURCES OF SEAPORT IMPACTS

Seaports consist of private and publicly funded enterprises that provide facilities and services to other industries and to households. To perform these functions, each seaport enterprise has employees and payrolls and purchases goods and services from other industries. For every direct job in a seaport industry and for every dollar expenditure by a seaport industry, there are "multiplier" effects in the sense that additional jobs, incomes, and sales are generated in other industries. The jobs and incomes associated with seaport enterprises themselves are usually referred to as "direct" economic impacts and those associated with the "rippling" of economic activities that stem from payments and purchases by seaport enterprises are usually referred to as "indirect" and "induced" economic impacts.

Because seaports are part of the basic infrastructure of the U.S. market system and affect the activities of so many industries, there are more long-term economic impacts than those associated with seaports purchases and sales. These can be identified with the incremental pricing and investment decisions of those who plan and manage seaport development and the response of U.S. and foreign industries and markets to them. Over the long-term, the availability and cost of seaport facilities and services and their geographic distribution affect the cost of

imported goods used by U.S. industry and the ability of U.S. exporters to compete in foreign markets. Industries respond to changes in the availability of seaport services by modifying their location, production and investment decisions which change regional labor and product markets and affect the distribution of jobs and incomes in California. These secondary effects have subtle impacts on the demographic characteristics of the California population.

The short-term impacts associated with purchases by seaports and seaport related industries can be traced through the economy and discussed in terms of output, income or employment multipliers. The long term impacts associated with seaport pricing and investment decisions are more difficult to assess because they depend on responses by U.S. and foreign industries and markets which are difficult to forecast. For our purposes, we will distinguish the economic impacts from seaport activities from those economic impacts that result or could result from seaport management decisions.

ECONOMIC IMPACTS FROM SEAPORT ACTIVITIES

Some seaport related activities, like shipbuilding and ship repair or port administration, may not be affected directly by change in the volume or value of cargo passing through a seaport. Other activities, like stevedoring, storage services, inland trucking, etc., are affected directly by the amount of cargo throughput. Expenditures by seaport administrations and seaport related industries can be separated into those that are cargo related and those that are noncargo related.

Cargo Related Expenditures

The direct expenditures associated with moving various types of cargo through California seaports are shown in Exhibit 4-1. Note that expenditures to move containerized cargo through California's seaports account for around 50% of all cargo related expenditures and that over 65% of all cargo related expenditures are made in the Los Angeles area (which includes the ports of Long Beach and Los Angeles). Note also that 51% of cargo related expenditures in the Los Angeles area and 58% of the expenditures in the San Francisco Bay Area are associated with containers and that these two areas account for over 90% of all cargo related expenditures in California. By comparison, container handling expenditures account for only 1.8% of cargo handling expenditures at San Diego and other seaport areas which collectively account for only 7% of cargo handling expenditures in California. These figures illustrate that the growth of containerization, perhaps coupled with the increasing size and specialization of ships and cargo handling facilities has already drawn seaport related jobs and incomes to the Los Angeles area from other California seaport areas.

Noncargo Expenditures

Besides providing cargo handling facilities and services, most seaports have other maritime industries that are related to shipping and provide jobs and incomes, but do not respond immediately to the volume or value of cargo throughput. Exhibit 4-2 shows the jobs and incomes generated by some of the major maritime industries that exist in California seaports. These

industries create jobs and incomes that do not fluctuate or move geographically as quickly as cargo related jobs and expenditures. Eventually, most of these maritime industries can be expected to respond in some way to changes in the allocation of cargo through California's seaports, but their response and the potential economic impact of their response must be studied on a case by case basis. Industries such as shipbuilding, for example, may expand in seaport areas where reduced cargo flows make more waterfront areas available; other industries like shipping and freight forwarding services are more likely to reduce operations in areas with declining shipping traffic when it is clear that the decline represents a long-term trend and not just a short-term geographic shift.

MULTIPLIER EFFECTS

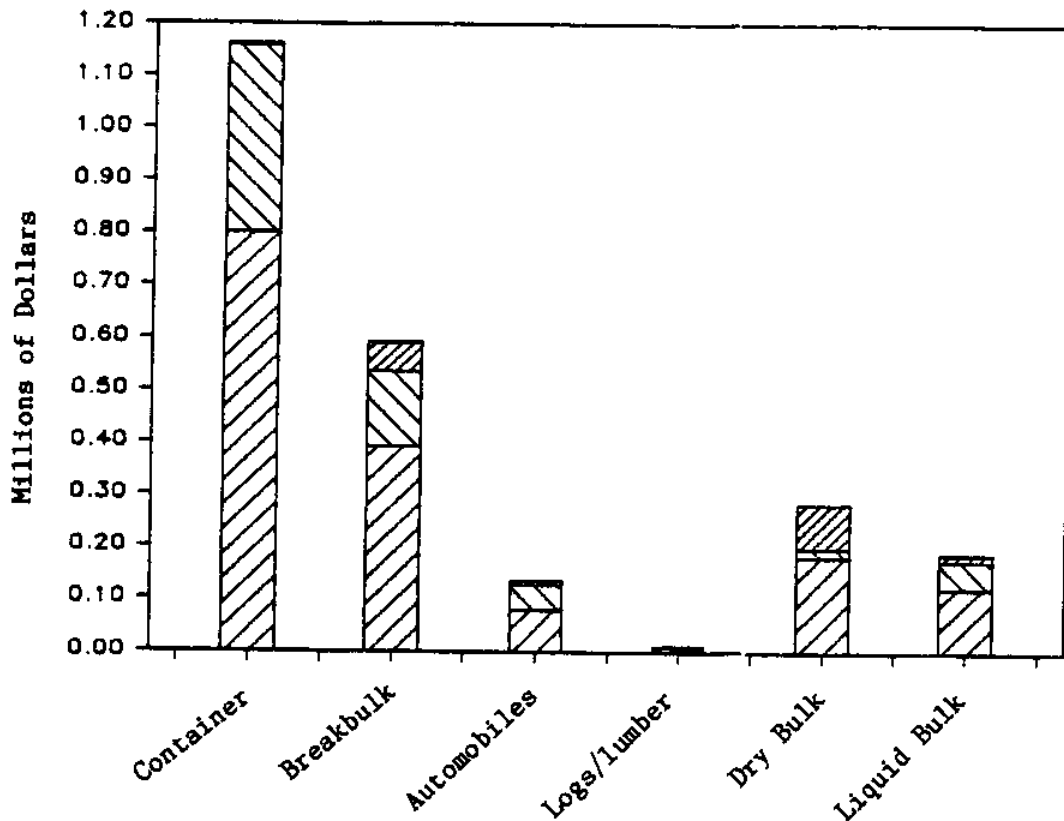
The jobs, incomes and purchases directly associated with California seaport industries generate indirect and induced economic impacts that can be estimated using economic "multipliers." An analysis of seaport-related purchases and sales in California during 1981 by the Pacific Maritime Shipping Association (PMSA) resulted in the set of economic multipliers shown in Exhibit 4-4a. The OUTPUT MULTIPLIERS show the overall dollar increase in California economic activity that results per dollar of direct sales by a seaport industry. The INCOME MULTIPLIERS show the increase in California household incomes generated per dollar of direct payroll expenditures by seaport industries. The EMPLOYMENT MULTIPLIERS show the number jobs generated in California per direct seaport-related job in the

state.

On the basis of these multipliers and estimated direct seaport-related sales, incomes and employment, the overall economic impact of California's seaports have been estimated and are shown in Exhibit 4-4b. The overall economic impact of the various types of cargoes passing through California's seaports are summarized in Exhibit 4-5a and 4-5b.

EXHIBIT 4-1

1981 CARGO-HANDLING EXPENDITURES
IN CALIFORNIA BY SEAPORT AREA
(millions of dollars)



Los Angeles Area

San Francisco Bay Area

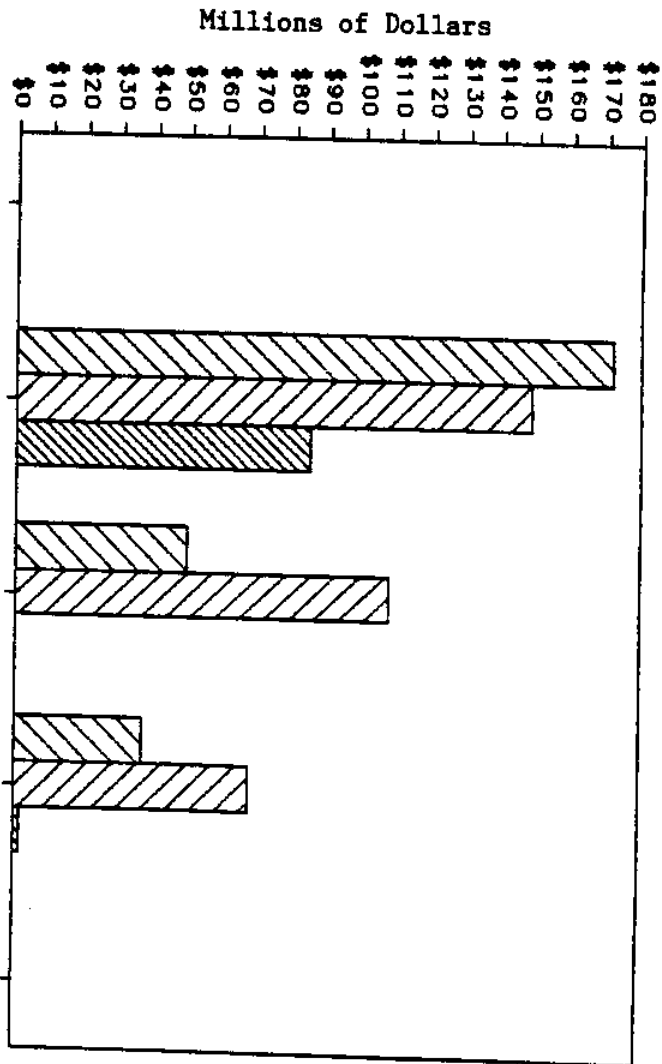
San Diego and Other Areas

Cargo/Vessel Type	Los Angeles Area	San Francisco Bay Area	San Diego and Other	ALL Calif. Seaports
Container	\$ 801	\$ 357	\$ 3	\$1161
Breakbulk	393	142	57	592
Automobiles	79	49	8	136
Logs/Lumber	8	1	3	12
Dry Bulk	182	17	84	283
Liquid Bulk	123	51	13	187
Total	\$1586	\$ 617	\$ 168	\$2371

1981 EMPLOYMENT AND PAYROLL EXPENDITURES
IN SELECTED CALIFORNIA MARITIME INDUSTRIES

	Payroll (millions)	Employment (no. of jobs)
<u>Shipbuilding & Ship Repair Industries</u>		
Los Angeles Area	\$172.0	7,894
San Francisco Bay Area	148.6	6,230
San Diego and Other Port Areas	84.6	3,356
California	<u>\$405.2</u>	<u>17,280</u>
<u>Shipping and Freight-Forwarding Administration*</u>		
Los Angeles Area	\$ 49.2	1,229
San Francisco Bay Area	107.4	2,695
San Diego and Other Port Areas	N/A	N/A
California	<u>\$156.6</u>	<u>3,914</u>
<u>Government Maritime Services</u>		
Los Angeles Area	\$ 36.8	1,754
San Francisco Bay Area	67.5	3,320
San Diego and Other Port Areas	1.6	49
California	<u>\$105.9</u>	<u>5,123</u>

*Figures for shipping company administration represent partial estimates of actual values.



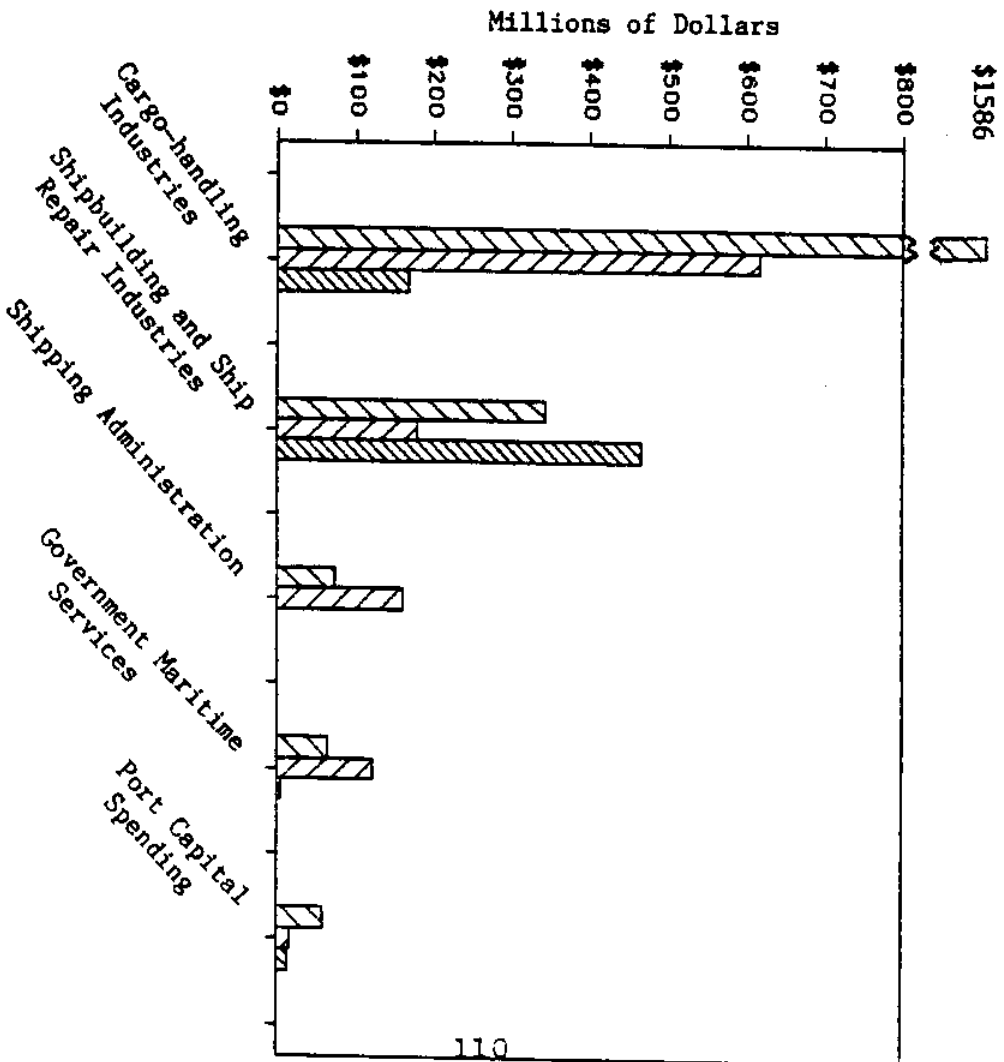
Sources: Pacific Merchant Shipping Association, "Final Technical Report on the Economic Impact of the Maritime Industry on Pacific Coast States," San Francisco, 1982.

Los Angeles Area
 San Francisco Bay Area
 San Diego and Other Port Areas

VALUE OF DIRECT OUTPUT BY CALIFORNIA SEAPORT INDUSTRIES

Industry	Los Angeles Area	San Francisco Bay Area	San Diego and Other	All Calif.
Cargo-handling Industries	\$1586	\$ 617	\$ 168	\$2371
Shipbuilding & Ship Repair Indus.	343	180	466	989
Shipping Administration	74	161	0	235
Government Maritime Services*	65	122	5	192
Port Capital Spending*	58	16	13	87
Total	<u>\$2126</u>	<u>\$1096</u>	<u>\$ 652</u>	<u>\$3874</u>

*Measured in terms of dollar expenditures rather than dollar sales.



Los Angeles Area

San Francisco Area

San Diego and Other

Source: Pacific Merchant Shipping Association, "Final Technical Report on the Economic Impact of the Maritime Industry on Pacific Coast States," San Francisco, 1982.

EXHIBIT 4-4A

CALIFORNIA MULTIPLIERS FOR SEAPORT INDUSTRIES*

Output Multiplier	2.11
Income Multiplier	2.06
Employment Multiplier	2.24

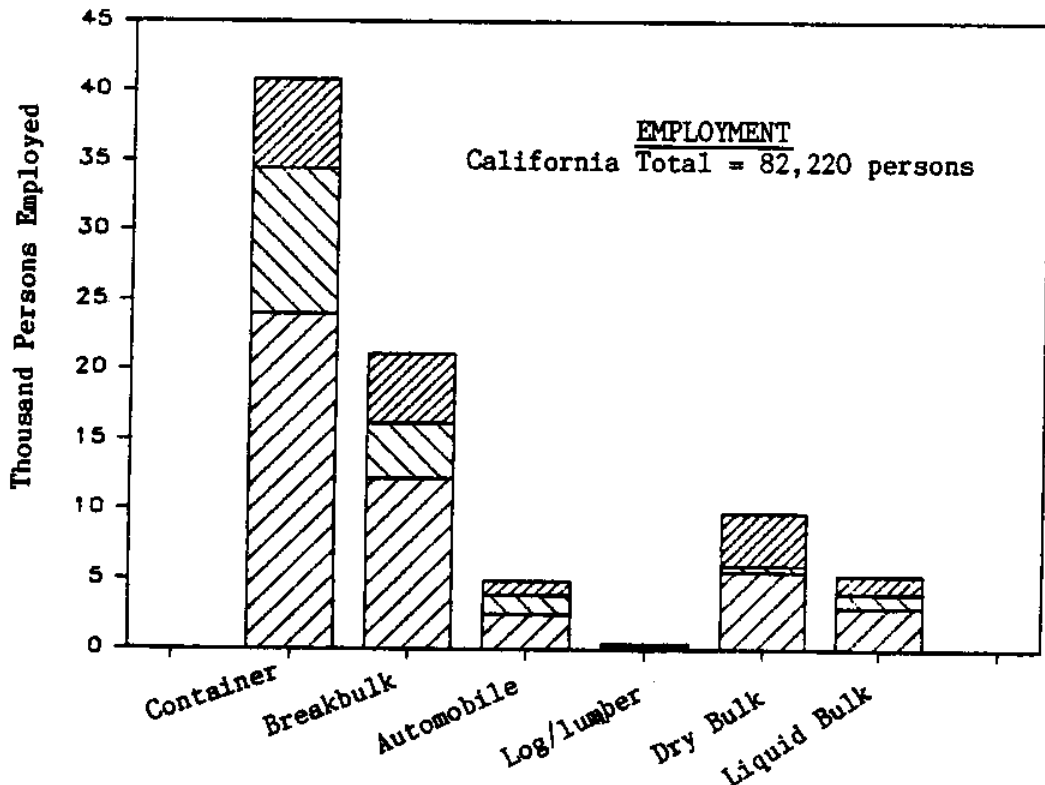
EXHIBIT 4-4B

SUM OF DIRECT, INDIRECT AND INDUCED ECONOMIC
IMPACTS OF CALIFORNIA SEAPORT INDUSTRIES*

Area	Output (millions)	Wages (millions)	Taxes (millions)	Employment (persons)
-----	-----	-----	-----	-----
<u>Los Angeles/Long Beach</u>				
Maritime Industries	\$2126	\$735	\$ 94	28,820
Other Port Industries	2343	833	125	39,290
	-----	-----	-----	-----
Total	\$4469	\$1568	\$219	68,110
<u>San Francisco Bay</u>				
Maritime Industries	1096	452	56	17,230
Other Port Industries	1035	480	65	20,860
	-----	-----	-----	-----
Total	\$2131	\$ 932	\$121	38,090
<u>San Diego & Other</u>				
Maritime Industries	652	216	14	15,470
Other Port Industries	921	178	23	16,370
	-----	-----	-----	-----
Total	\$1573	\$ 394	\$ 37	31,840
<u>California</u>				
Maritime Industries	3874	1403	164	61,520
Other Port Industries	4299	1491	213	76,520
	-----	-----	-----	-----
Total	\$8173	\$2894	\$377	138,040
	=====	=====	=====	=====

These figures are based on an input-output analysis of 1981 data performed by Temple Barker and Sloane, Inc. of Lexington, Massachusetts under contract to the Pacific Merchant Shipping Association (PMSA). Analytical techniques and results are discussed in a technical report available from PMSA offices in San Francisco.

DIRECT, INDIRECT AND INDUCED ECONOMIC IMPACTS
OF MARITIME CARGO FLOWS THROUGH CALIFORNIA

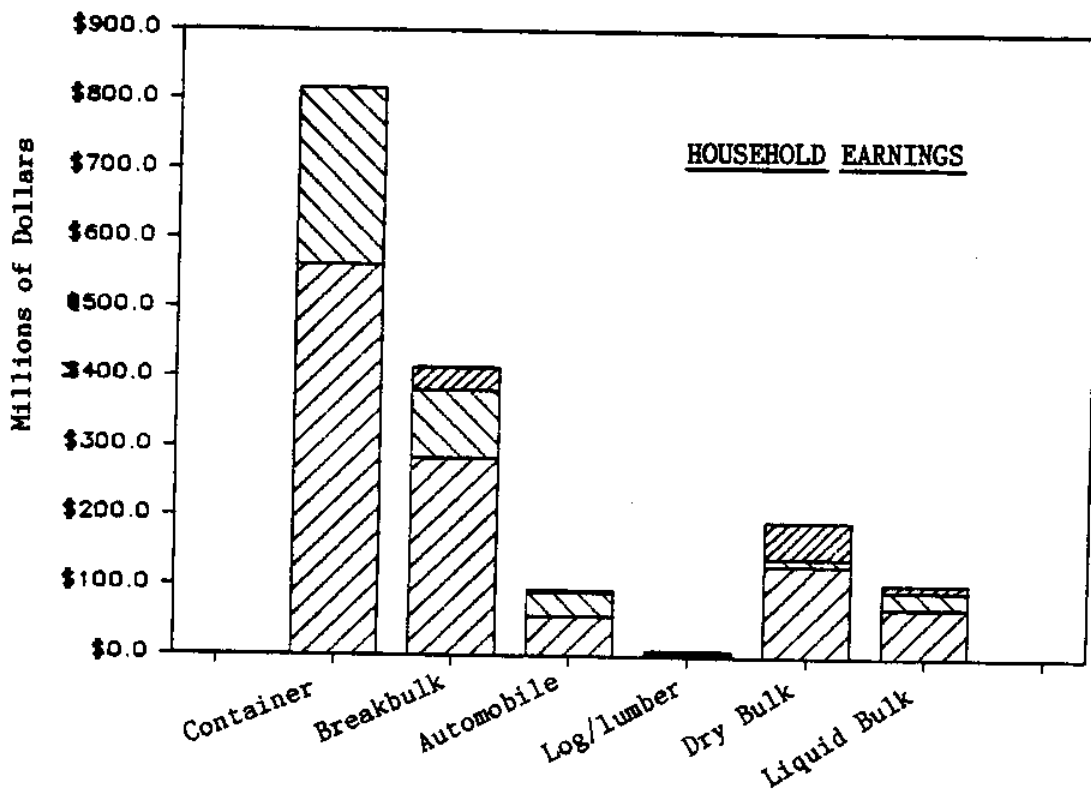


Los Angeles Area
 Total = 47,300 persons

San Francisco Bay Area
 Total = 17,170 persons

San Diego and Other
 Total = 17,750 persons

Refer to table on following page.



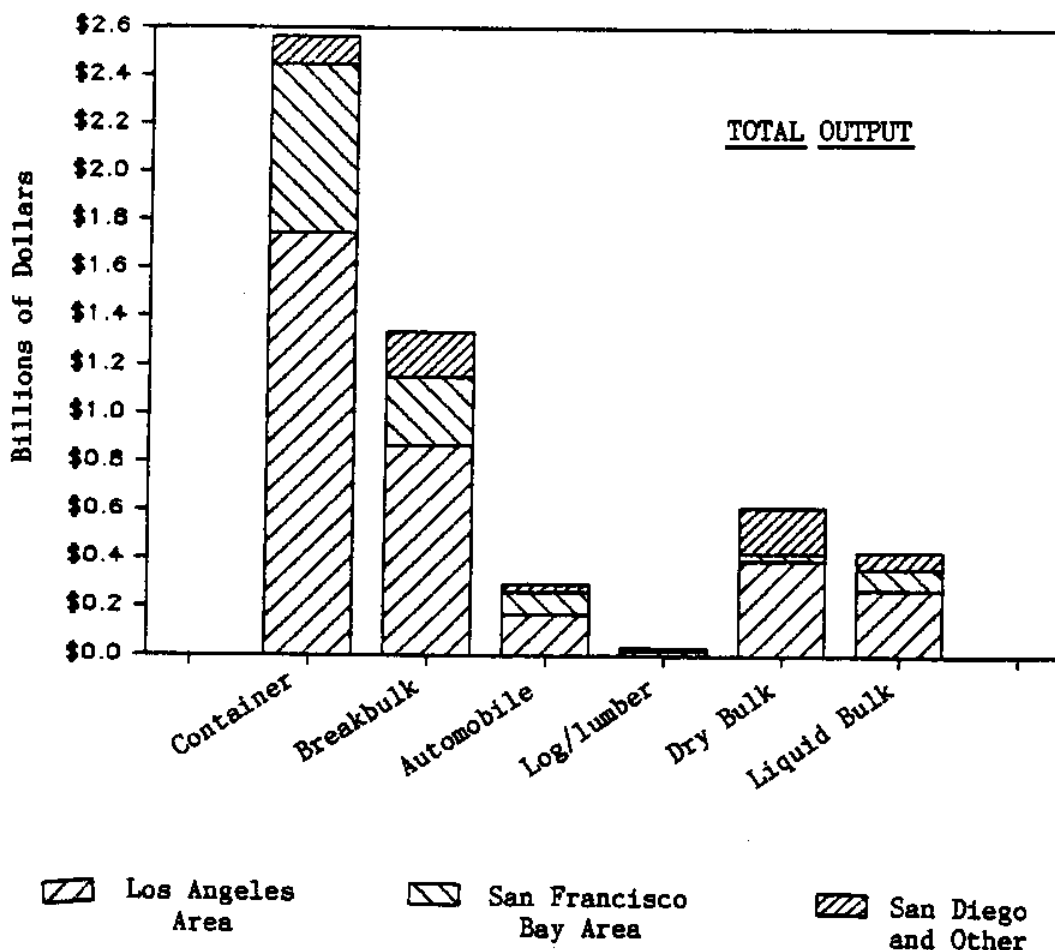
Los Angeles Area

San Francisco Bay Area

San Diego and Other

EXHIBIT 4-5B

DIRECT, INDIRECT AND INDUCED ECONOMIC IMPACTS
OF MARITIME CARGO FLOWS THROUGH CALIFORNIA



	CONTAINER	BREAKBULK	AUTOMOBILE	LOG/LUMBER	DRY BULK	LIQUID BULK	TOTAL
LOS ANGELES AREA							
OUTPUT	1745	864	168	17	391	270	3455
WAGES	564	284	57	5	131	71	1112
EMPLOYMENT	24010	12160	2440	230	5510	2950	47300
SAN FRANCISCO BAY							
OUTPUT	698	285	94	1	32	90	1200
WAGES	253	97	34	0	11	25	420
EMPLOYMENT	10380	3980	1360	10	430	1010	17170
SAN DIEGO AND OTHER							
OUTPUT	119	187	31	10	192	68	607
WAGES	0	34	3	3	53	10	103
EMPLOYMENT	6420	5010	1060	170	3800	1290	17750
CALIFORNIA TOTAL							
OUTPUT	2562	1336	293	28	615	428	5262
WAGES	817	415	94	8	195	106	1635
EMPLOYMENT	40810	21150	4860	410	9740	5250	82220

APPENDIX A

GLOSSARY OF PORT-RELATED TERMS

Apron - That portion of a pier and wharf measured between the outer edge of the water-facing side and the transit shed or other inshore boundary formed by a storage facility structure.

Backland - The land area behind docks and berths within a port, used for marshalling storage and handling of cargoes.

Backup Area - That portion of a marine terminal consisting of paved open storage area at the inshore or upland side of a pier or wharf terminal facility.

Barge Carrier - A class of oceangoing ship that carries cargo preloaded in barges which are offloaded and loaded from the "mother" ship by special heavy-lift crane or elevator installed at the stern end of the ship, and the barges are then towed or pushed from the ship to shoreside terminals.

Berth - The water area at the face of a wharf or at the head and/or sides of a pier where vessels moor or tie up for the transfer of cargo.

Breakbulk Cargo - Heterogeneous items of general cargo, packaged and moved as single parcels or assembled together on pallet boards and wire or rope cargo slings as a means of lifting on and off a vessel by ship's gear or by wharf cranes.

Bunkering - The operation of transferring fuel from shore pipelines or barge to vessels.

Coastwise Traffic - Domestic trade made up of traffic between ports on the same coast within natural territorial limits, as distinguished from foreign traffic, intercoastal traffic or traffic to noncontiguous territories.

Combination Carrier - A class of ship configured to carry both liquid bulk and dry bulk cargoes.

Container - A large standard size protective box into which cargo may be packed for shipment aboard specially configured oceangoing containerships and designed to be easily interchangeable between the three basic modes of transportation - ship, truck and rail. The transfer unit is the container rather than the cargo contained therein.

Containerized Cargo - Cargo packed in standard modular containers (usually in sizes of 20, 26, 35 or 40 feet) which are transferred intermodally from shipper to consignee.

Containership - A class of oceangoing vessel that is specially designed to carry standard size containers nested in vertical container cells within the hull of the ship as well as stacked on deck and lifted on and off by means of specialized container cranes operating at high speed along the wharf apron. Full containerships are fully cellular and carry only container cargo whereas partial containerships carry a combination of containerized and breakbulk general cargo.

Conventional General Cargo - Synonymous with the term "breakbulk cargo."

Deadweight Tons (dwt) - The cargo carrying capacity of a vessel, including the weight in long tons of cargo, fuel, water, stores, crew and their effects that can be safely carried by the ship.

Deep-draft Port - A seaport that is accessible to seagoing ships, i.e., it has water depths in harbor channels and at marine terminal facilities capable of accommodating deep-draft oceangoing vessels.

Deepwater Oil Port - Associated with special offshore or onshore terminal berthing facilities for handling the unloading of the very large crude oil carriers (VLCC) and ultra large crude oil carriers (ULCC) requiring 100 feet or more of water depth.

Demand-Capacity Analysis - The comparison of waterborne commerce demand forecasts with marine terminal cargo handling capability estimates in order to discover any shortfalls or deficits in port terminal capacity and hence assess future facility requirements.

Demurrage - The charge against merchandise remaining on the wharf after a designated period of free time.

Dockage - the charges assessed a vessel for berthing at or making fast to a municipal berth.

Draft - The number of feet below the surface of the water to which a vessel is submerged or the depth in feet of a vessel measured between the waterline and the keel.

Dry Bulk Cargo - Cargo which may be either loose, grained, free-flowing or solid, such as grain, coal, ore, and is not shipped in packaged form and is usually handled by specialized mechanical equipment at specially designed dry bulk terminals.

Effective Working Capacity - Refers to the average annual practical cargo-handling capability estimated for a major cargo movement category in a specific coastal region and expressed in long tons on a per berth per year basis.

General Cargo - Miscellaneous commodities shipped in various types of packaging of irregular size and weight or of regular uniform size and weight. The shipping and handling techniques can be as breakbulk, containerized or neobulk general cargo.

Harbor - An area of water affording a natural or artificial haven for ships. A harbor is a port only when used for cargo transfer or other business between ship and shore.

Hinterland - The area served by or tributary to a port where a port's exports are produced and its imports are marketed.

Hopper Barge - One of the most basic and versatile of barge types consisting of a simple double skinned, open top box with the inner hull shell forming a long hopper or cargo hold. A variant of the open hopper barge is a covered hopper barge with rolling weathertight hatch covers.

Inland Riverport - Usually associated with port terminal facilities served by towboats and barges moving over shallow draft, inland river navigation channels.

Intermodal - Used to describe the capability of marine containers to be moved, transported or interchanged between rail and truck and ship in any order.

Intermodal Transfer (or Break-Bulk Point) - The point at which the mode, method or type of cargo transportation is changed from sea to land or vice-versa. Also includes changed in land transportation types, i.e., truck to rail, etc.

Internal Movements - Domestic traffic consisting primarily of receipts and shipments between two ports or landings within the same region wherein the entire movement takes place on inland waterways.

Land-Bridge - An intermodal sea/land transport system under a single bill of lading and a joint through-service tariff using the U.S. transcontinental railway system connecting U.S. West and East or Gulf Coast ports for the movement of cargo between foreign ports of origin and destination. The system is in direct competition with the all-water transport system using the Panama Canal between foreign ports.

LASH - "Lighter-aboard-ship," a type of oceangoing barge carrying vessel with the cargo loaded in sealed floatable boxes or barges which are handled on and off the "mother" ship by ship-mounted cranes and are then pushed or towed to a shoreside terminal.

Lightering - The transfer of cargo from ship to barge or smaller vessel.

Liquefied Gases - A category of waterborne cargo movement which includes primarily liquefied natural gas (LNG) and liquefied petroleum gas (LPG) and other manufactured gases, coal gases, and natural gas products.

Liquid Bulk Cargo - Liquid cargo shipped in large enough quantities to make it practical to employ tankers or tank barges rather than containers consisting of barrels, casks or drums to be handled separately as breakbulk.

LNG - "Liquefied natural gas," one of the major types of liquefied gas cargoes transported in special cryogenic or LNG tanker vessels. The natural gas is liquefied at the source by cooling to -259 F. and pumped via pipeline into LNG tankers designed to maintain cryogenic temperatures during the voyage.

Local Movements - Domestic traffic shipments and receipts between terminal berths in the same port or harbor area.

Long Ton - Equivalent to a measure of 2,240 pounds avoirdupois weight per ton.

LPG - "Liquefied petroleum gas," another one of the principal types of liquefied gas cargoes transported in LPG tanker vessels.

Mandated Costs - Added development costs incurred by ports brought about by federal legislation in the areas of environmental protection, employee health and safety and cargo security regulations.

Marine Terminal - Consists of a pier or wharf structure located in a harbor used for transferring cargo between ship and shore and includes one or more ship berths together with cargo handling equipment, railroad and truck accommodations, covered and open storage space and other facilities.

Marshalling Yard - Open space adjacent to containership berthing facilities at marine container handling terminals designed for parking and stacking inbound and outbound containers moving between ship and terminal storage and between the hinterland and terminal storage.

Micro-Bridge - An intermodal sea/land transport system under a single bill of lading at a single rate under a joint through-service tariff using U.S. railroad connecting a seaport with an inland major metropolitan city. It differs from mini-bridge in that the cargo has its origin or destination at a rail terminal in an inland city as opposed to a rail terminal in a seaport city. Micro-bridge service is in direct competition with both the mini-bridge system and the all-water system using the Panama Canal.

Mini-Bridge - An intermodal sea/land transport system under a single bill of lading at a single rate under a joint through-service tariff using the U.S. transcontinental railway system connecting U.S. West and East or Gulf Coast ports and railway terminals for the movement of cargo between foreign ports and railway terminals in U.S. port cities via U.S. port cities on the opposite coast. The system is in direct competition with the all-water transport system using the Panama Canal between foreign and U.S. ports.

Neobulk Cargo - Used to describe general cargo of a single type handled in uniform size units and shipped in very large quantities, frequently as an entire shipload. Automobiles, steel, logs, lumber, scrap and other cargoes are some typical examples of neobulk cargo.

On-carrier - Used to describe all of the various modes of surface transportation which handle the inbound and outbound movement of cargoes between a marine terminal and the port hinterland via rail, truck or barge.

Overland Common Point (OCP) - Through service between ports and inland destinations providing time and cost savings.

Pier - One of two basic types of ship berthing structures extending into a body of water at an angle with the shoreline. Berthing for cargo transfer is usually available on the two sides of the pier and is sufficiently wide at the head or face of the pier as well.

Port Capacity - In terms of tons per year, the total capability of a port to move cargoes through terminal facilities located within the port precincts.

Port Industry - Any economic activity that is directly needed in the movement of waterborne cargo. This not only includes the loading and discharge of ships, but also the many port activities that take place beyond the piers and wharves on the waterfront.

Practical Handling Capacity - The estimated practical total cargo that can be processed or moved across a pier or wharf apron and through a marine terminal during normal working hours in the period of one effective cargo-working year.

Ro/Ro - "Roll-on/roll-off," identifies a cargo vessel constructed to allow containerized or unitized cargo loading without ships gear or wharf cranes, but by wheeled trailers driven on and off the vessel by tractor power via ramps at the cargo terminal Ro/Ro berth.

SEABEE - A type of barge carrier ship similar to the LASH vessel except it employs a heavy-lift elevator at the stern end of the ship to lift barges on and off.

Short Ton - Equivalent to a measure of 2,000 pounds avoirdupois weight per ton.

Slurry - A thin mixture of liquid and finely divided solids that can be handled as a fluid cargo through pipelines and transported by special tankers. Ore, coal and several other commodities may be handled as slurry cargo.

Specialized General Cargo Facilities - Refers to general cargo terminals which provide berthing facilities for accommodating container, Ro/Ro and barge carrier ships.

Storage Capacity - The number of tons of a particular class of cargo that can be adequately stored at a marine terminal.

Tank Barge - A basic type of barge for the transportation of liquid bulk commodities. Some tank barges have independent cylindrical tanks to carry liquid bulk cargoes whereas others utilize the entire midship shell of the vessel's hull as a cargo tank divided by bulkheads.

TEU - "Twenty-foot Equivalent Unit," used as a standard measure of a containership's container-carrying capacity in terms of an 8 x 8 x 20 foot size container.

Throughput Capacity - The estimated total tons of cargo that can be processed and handled through a port terminal or berthing facility in the course of one year.

Transit Shed - A building on a breakbulk general cargo wharf which provides temporary accommodations and sorting space for cargo being transferred to or from a vessel.

Unitized Cargo - Single unit cargo, e.g., strapped and palletized citrus products, electronic equipment, etc.

Warehouse - A building in which goods may be stored over such a period of time as necessary to make further distribution.

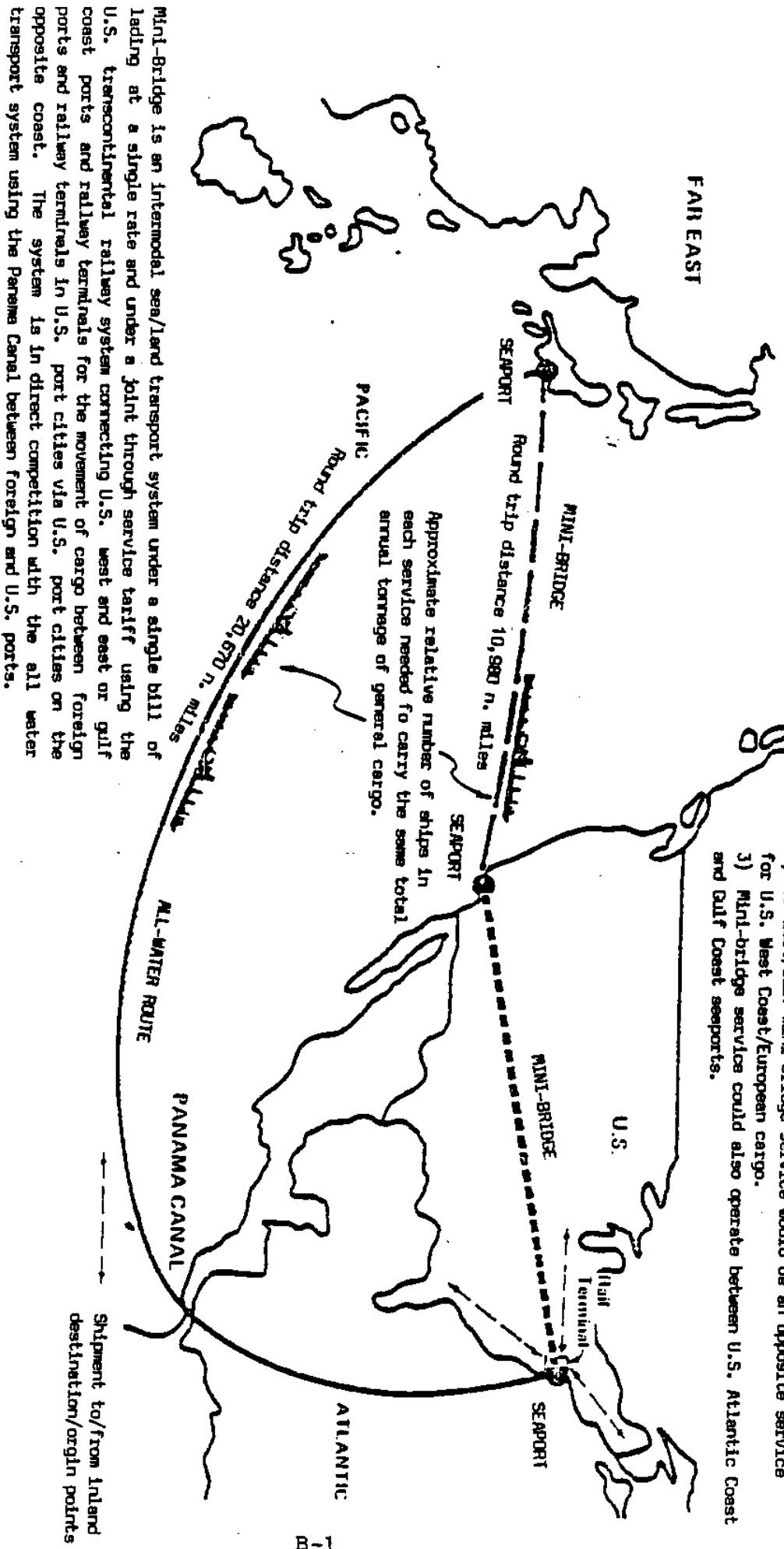
Water-dependent Industrial and Commercial Facilities - Facilities for industrial and commercial uses which depend on access to or frontage on navigable waters for the movement of raw or processed materials, shipbuilding and ship repair operations, commercial sport fishing operations and limited areas for access to industrial water supplies or for access to harbor water for appropriate waste water discharge.

Water-oriented Industries and Commercial Facilities - Facilities whose operations and/or needs are related to or are most advantageously served by locations in the port near, but not necessarily fronting on harbor waters.

Wharf - A general term for any structure at which vessels berth or tie-up. The term is also used specifically for a berthing structure of open piling construction aligned parallel with the shoreline and referred to as a marginal wharf.

Wharfage - The charge assessed against all merchandise for the use of wharves or wharf premises.

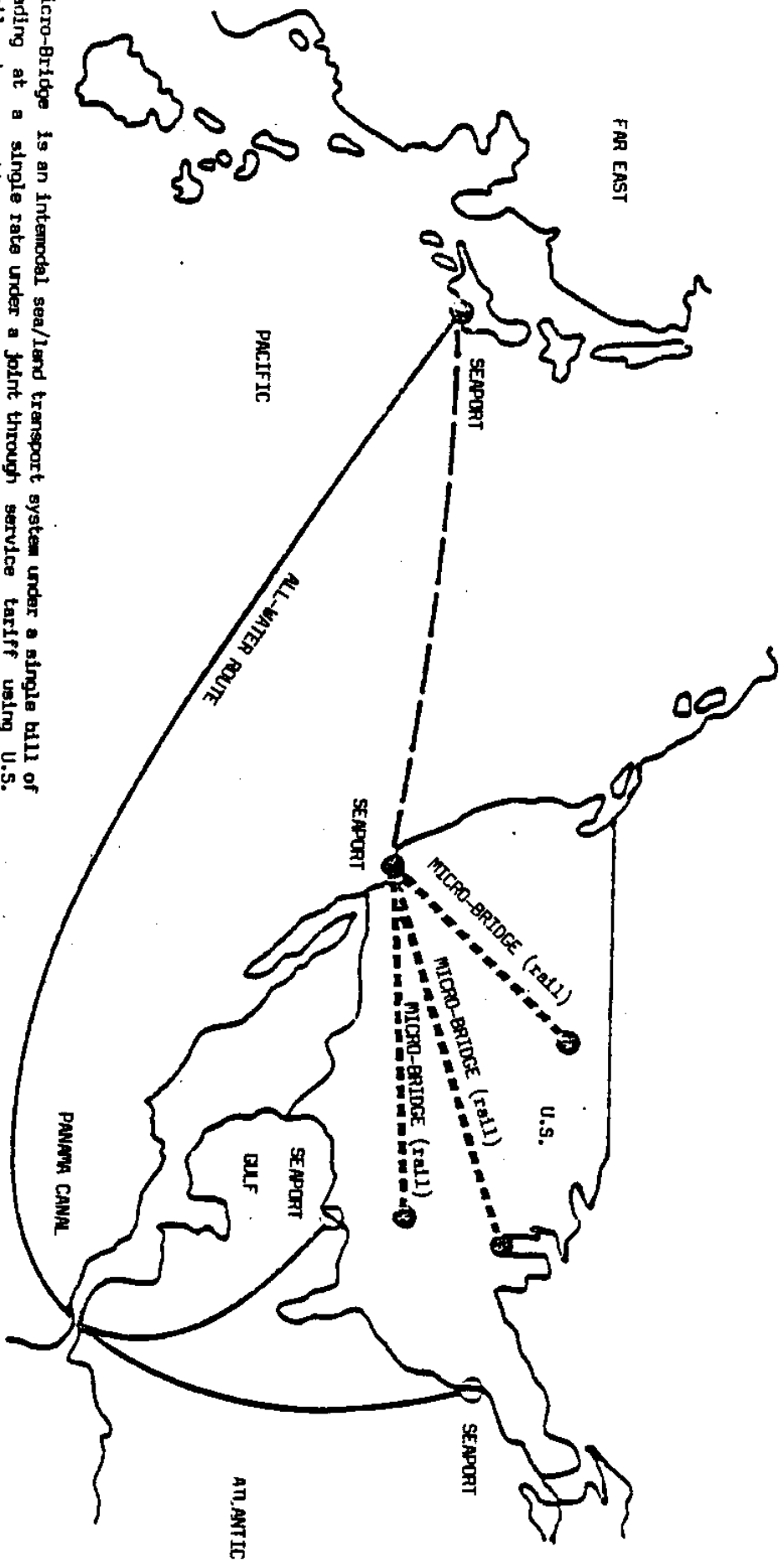
- NOTES
- 1) West coast mini-bridge could also serve U.S. Gulf ports.
 - 2) An East/Gulf mini-bridge service would be an opposite service for U.S. West Coast/European cargo.
 - 3) Mini-bridge services could also operate between U.S. Atlantic Coast and Gulf Coast seaports.



Mini-Bridge is an intermodal sea/land transport system under a single bill of lading at a single rate and under a joint through service tariff using the U.S. transcontinental railway system connecting U.S. west and east or gulf coast ports and railway terminals for the movement of cargo between foreign ports and railway terminals in U.S. port cities via U.S. port cities on the opposite coast. The system is in direct competition with the all water transport system using the Panama Canal between foreign and U.S. ports.

U.S. West Coast Mini-Bridge Service – U.S. East Coast /Far East vs. All-Water Panama Canal Route

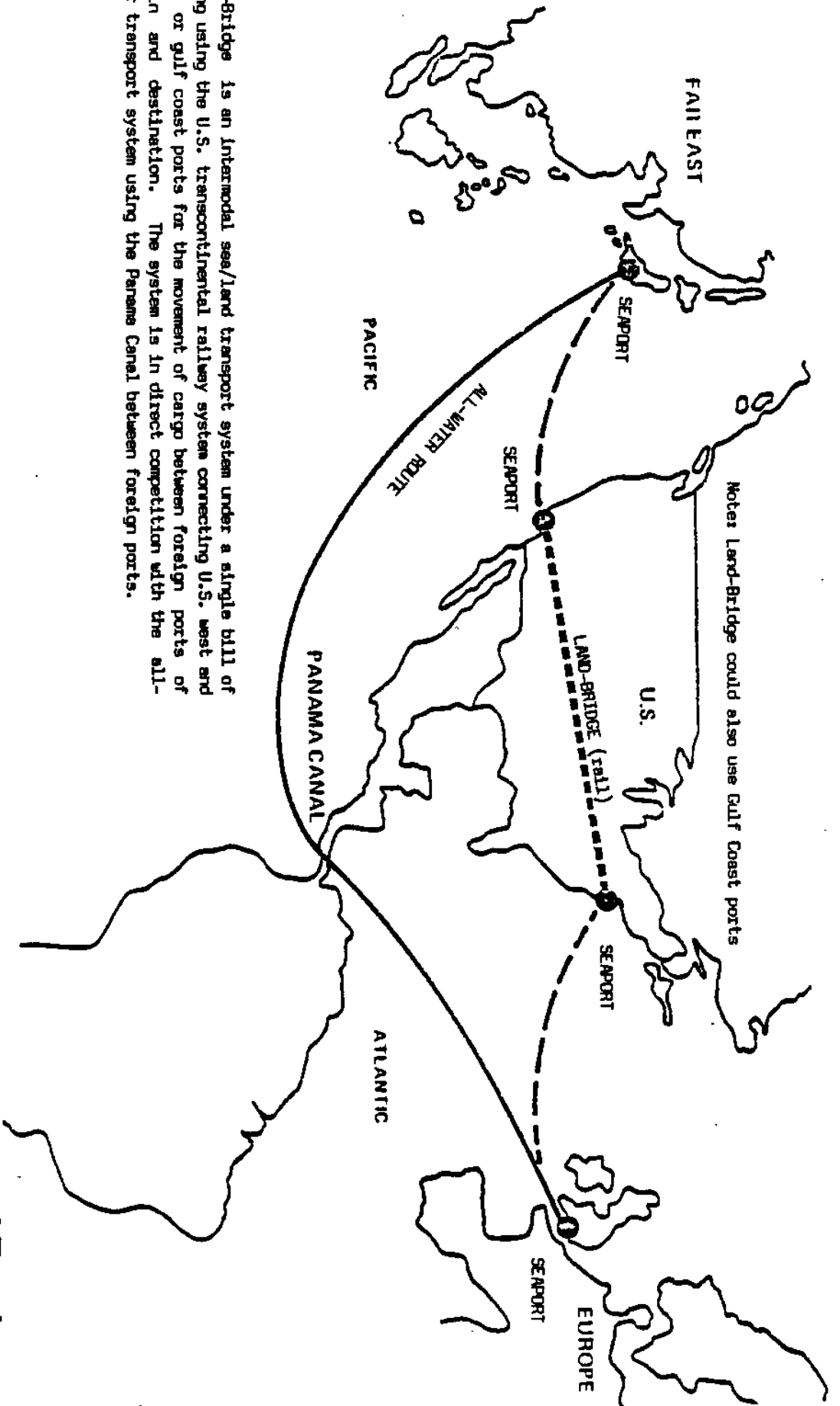
Source: Port of Los Angeles, Master Plan (Los Angeles, 1980).



Micro-Bridge is an intermodal sea/land transport system under a single bill of lading at a single rate under a joint through service tariff using U.S. railroads connecting a seaport with an inland major metropolitan city. It differs from Mini-Bridge in that the cargo has its origin or destination at a rail terminal in an inland city as opposed to a rail terminal in a seaport city. Micro-Bridge service is in direct competition with both the Mini-Bridge system and the all water system using the Panama Canal.

U.S. West Coast Micro-Bridge Service -- Eastern U.S. Cities / Far East vs. All-Water Panama Canal Route

Sources: Port of Los Angeles, Master Plan (Los Angeles, 1980).



Land-Bridge is an intermodal sea/land transport system under a single bill of lading using the U.S. transcontinental railway system connecting U.S. west and east or gulf coast ports for the movement of cargo between foreign ports of origin and destination. The system is in direct competition with the all-water transport system using the Panama Canal between foreign ports.

U.S. Land-Bridge vs. All-Water Panama Canal Route Far East - European Cargo

Sources: Port of Los Angeles, Master Plan (Los Angeles, 1980).

